



A room of one's own

"Shoes off, please", says Jasmina Kajtazović when you enter her room. It's an Eastern European custom, the student explains with a laugh.

P4



Einstein Telescope

Soil research is a "complex puzzle". How suitable is the Limburg soil for the construction of a gigantic detector?

P6-7

observant

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Restafval

General waste

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General waste

Very good, coffee cups belong in the residual waste

This may soon go in the new GFT bin

Can you take this to the bank yourself?

See p5

Illustration: Simone Golob



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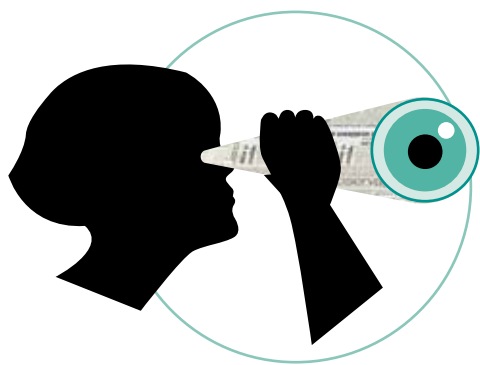
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Riki Janssen

editorial

I could've been a tad less defensive

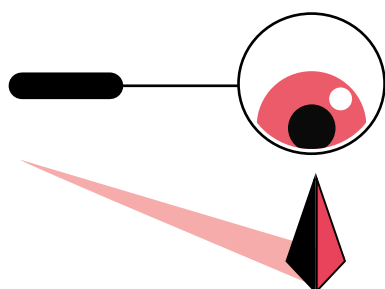
Last Monday, we said goodbye to our intern of two months. Her time here has flown by; she was a good fit for the team, wrote a number of articles, took criticism well, and learnt a lot, as she herself concluded. One of the things she learnt is that being a journalist is probably not for her after all. And no, that's not a sign of failure, even if that thought crossed her mind. It's actually a sign of wisdom, discovering what you *don't* want, where your passion *doesn't* lie. As a farewell gift, we got her a beautiful notebook with kind words and well wishes from the entire team. One thing is clear: with her qualities and commitment, she'll land on her feet. The next day, on Tuesday, we interviewed applicants for the vacant position of junior journalist. They were all graduates or soon-to-be graduates who either thought or already knew

that they wanted to become a journalist. I was reminded of myself, crossing the Servaas bridge one early morning in the early nineties, on my way to a room in what is today the Faculty of Law on Bouillonstraat. I, too, wanted to be a journalist. In fact, as far as I was concerned, I already *was* a journalist, as I'd been writing articles as a freelancer for a while. I sat down, filled with nervous energy. I don't remember much of the interview, except for one thing: they criticised one of my articles, an article that I was proud of. I didn't hesitate for a second and defended my own writing. After all, I'd thought carefully about every sentence, and the article had been approved by my first journalism teacher in Nijmegen. Was I right to? I don't know, but I could've been a tad less defensive, I'm afraid. What I do know is that I learnt

a lot in the years that followed. About interviewing, writing, handling criticism, working in a team and, later, leading a team. And I've learnt that I'll always be learning. Every now and then, someone good-naturedly pokes fun at my spirited defence of my own writing all those years ago.

Sitting on the other side of the table this week, I and my colleagues CF and WD quickly agreed on what we were looking for in a junior journalist: the will and capacity to learn, enthusiasm for the profession, and a pleasant personality. Two candidates scored high on all counts. We've offered them both jobs. It'll be fun and exciting, for them and for us.

Every week, the editor-in-chief writes about what has been happening at the Observant office



splinters

A funny incident, a striking piece of news, something interesting that happened elsewhere in the country: it is in this column.



Women swimming

Do you like the drawings in *Observant* too? They are often created by our graphic designer and illustrator Simone Golob. But she can do more than that – the results of which can now be seen in Hae (St. Jacobsstraat 5).

Inspired by many holidays on the Greek coast, Golob drew women swimming, on wooden panels, using the natural lines in the wood to add depth, movement and texture. The figures, drawn with pencil, sometimes painted with acrylic or printed onto the wood, float, dive or are coming out of the water. Golob refers to them as a series of icons, a reference to the Greek religious icons, which she feels symbolise “resilience, grace and a connection with nature.”

The exhibition Daily Icons can be visited until 13 June.

Eating faster because of sauce

“Stop scoffing!” Who hasn't had that said to them as a child or even as a teenager? Eating at a gentle pace is more polite and healthier. Chewing more slowly gives the brain time to pass on the signal ‘full’ to the stomach, as a result of which you eat less. But what causes people to eat fast or slowly? That is what PhD student Lise Heuven from Wageningen is investigating. The softer the food, the easier it is to swallow. That much was known. But Heuven shows that only part of the meal needs to be soft in order to eat fast. In her research, people ate boiled carrots that were still hard more slowly than if the same carrots were mixed into soft pasta. If sauce is added, the speed of eating increases by 30 per cent. If you want people to eat slower (or faster), you will have to focus on the meal as a whole.

In this way, meals can be prepared for various target groups, says Heuven to sister newspaper *Resource*. A salad with hard vegetables for people who are overweight and puree for the elderly and children who should eat a little more.



Wheelchair-(in)accessible

How accessible is the university for disabled people? That is what both the editors of university newspaper *Resource* in Wageningen and university newspaper *Mare* in Leiden, wondered. Wageningen University&Research comes out well. Master's student Soe Mattijssen, who has been in a wheelchair since she was twelve, gives the university an 8.5 on a 10-point scale for accessibility.

How different are things in Leiden. One student in a wheelchair was left to sort herself out during a fire drill because nobody could help her evacuate. “If there had been a real fire, I would have been up shit creek,” she says to *Mare*. It ‘could have been a great deal worse’: often she can't even get into the building. “It would make me so happy to have a threshold-free building. Also, if accessibility is actually provided, I often have to go every which way to find the lift in order to reach my classroom.”

Another student was excluded from an excursion because of her disability. Due to her fibromyalgia, she can't walk very far, so she sometimes uses a wheelchair. “I would be a disgrace to the guides that we were going to meet, evidently all bigwigs. The lecture also said that I would cause the whole group to be late for all the activities.” She has now put her study on hold temporarily. “I am sorry I went to study in Leiden.”

University Council discusses standards for binding study advice

“If you lower the bar in first year, there will be more pressure in second year”

The Executive Board, just like other universities in the Netherlands, sees little point in lowering the BSA standard to 30 credits (of the 60 in total). Students in the University Council are not enthusiastic either about education minister Dijkgraaf's plans aimed at lowering study pressure.

Two faculties in Maastricht don't have a BSA, says rector Pamela Habibović: Health Medicine and Life Sciences and Law. At FHML, “it doesn't fit in with the examination system” (programme-based testing), at the Faculty of Law, a pilot is being carried out at the moment in which the BSA (with a negative advice, the student has to leave) is replaced by a *non-binding* advice. There are no definite results yet, the rector stated, but it would appear that law students who are told that the study programme is not suitable for them, often stay anyway. The standard at other Maastricht faculties is around 45 credits, just like at most other Dutch universities. An exception is Erasmus University Rotterdam: its first-year students must get all 60 ECTS credits to be allowed to continue.

The BSA was created in order to determine as quickly as possible whether a student was doing the right study programme. If that is not the case and the student continues but doesn't finish after all, it will cost the institute money. Research by the collective universities (UNL) showed that the dropout rate of students (about 13 per cent with a BSA of 45) in programmes with a BSA is not greater, but they do drop out more quickly, Habibović explained. None of the student council members appear to be in favour of the minister's proposal. Charles de Groot (NovUM) supports the Executive Board: 30 credits is not enough,

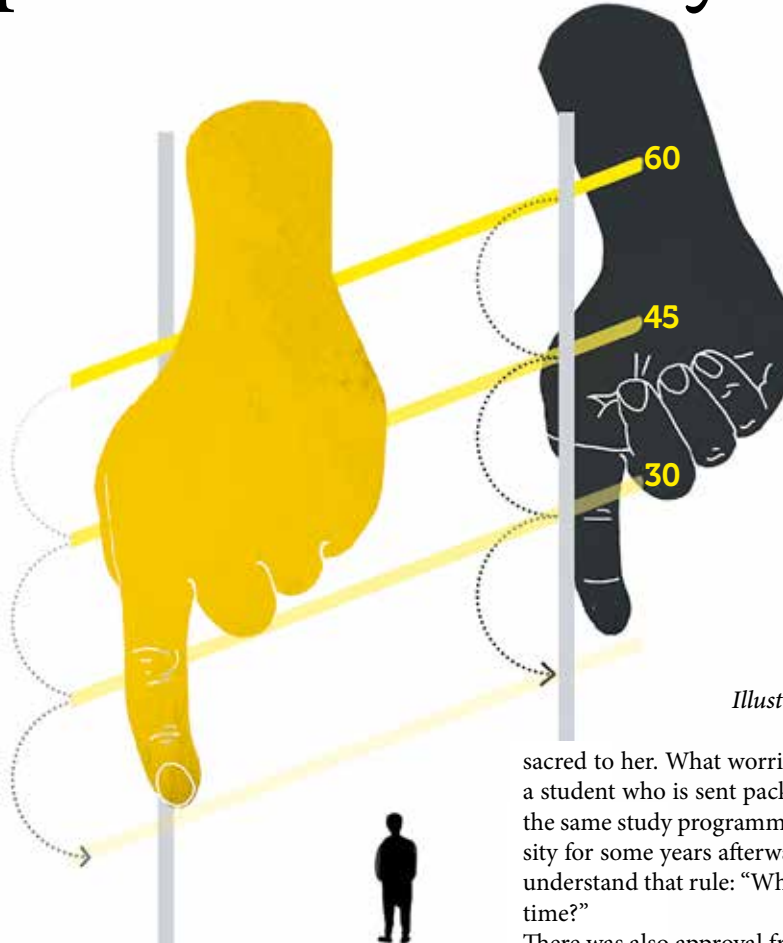


Illustration: Simone Golob

45 is okay. The same goes for Noël Capetti (DOPE), who pointed out the consequences: “If you lower the bar in first year, there will be more pressure in second year.” That is bad for students' well-being too, which after all is the reason why Dijkgraaf is currently presenting the plans.

Annefleur Bruin (DOPE) feels that 30 credits is a little low, she argued, but there could be a little more flexibility, the number 45 is not

sacred to her. What worries her is the fact that a student who is sent packing cannot enrol for the same study programme at the same university for some years afterwards. The rector does understand that rule: “Why would it work next time?”

There was also approval from the academic staff for the Executive Board's stance. Luana Russo: “When students eventually reach the point of writing a thesis after years of studying, it often appears that this is an impossible hurdle and it can take a long time for them to complete their studies. This causes frustration, both for students and for staff. It is good that there is a threshold in first year.”

Riki Janssen

Right through the city

If it was up to Frederiek Lommen, former-student of Law and Arts and Social Sciences, every tourist and inhabitant of Maastricht would be taking to walk around this city. She did so herself and this resulted in the (Dutch) book ‘Sterrenstad - Dwars door Maastricht’. Last Saturday she presented it in bookstore De Tribune.

Anyone who thinks: ‘I already know the Maastricht hotspots’, such as the Vrijthof, Onze Lieve Vrouweplein, Stadspark and Pietersberg, will be surprised by the many other parts of the city that Lommen discovered. Trichterveld, for example, one of the three neighbourhoods in Mariaberg, also known as the district with the ‘small white houses’. She discovered a small vineyard there. “One afternoon, as I was returning from the supermarket, and for the somanieth time wondered who owned the grapevines, a father with his son opens the gate. ‘Are you the owner?’ I asked. ‘I live here, yes, but my father-in-law is the owner. Come in and have a look!’” Lommen writes. She then finds herself sitting at the kitchen table with the winegrower of the Annadal vineyard. *Sterrenstad* is a guide with beautiful photo-



Small white houses in Trichterveld Photo: Frederiek Lommen

graphs of the city and a lot of background information: Where does the name ‘Casino’ Slavante come from? When was the train station in Maastricht built? What was the story behind a ceramics factory that closed its doors in the 1980s? What is *het Pottemmeke* in the middle of the central roundabout in Malpertuis?

Short anecdotes make it personal. Walking across the Dousberg golf course, for example, Lommen is chased off, while it is a public footpath: “Further along, I find a huge hole in

the hedge. Behind the hedge, I see the outline of a caravan camp. The difference couldn't be greater. I am irritated by the arrogance of the golfing couple and secretly hope that the children from the campsite climb through the hole in the hedge to play on the golf course every now and again.”

WD

Sterrenstad. Uitgeverij Passionate Nomads. 194 pages. Price: 20,95 euros



Defending the last free Cultural Space in Maastricht

Last month, a group of people dressed in black came together to protest the death of Landbouwbelang (LBB), the last remaining free cultural space in Maastricht.

As many of you know by now, the plan is to shut down LBB. Instead, the Drama Academy and the Conservatory of Music will find a new home there, as will new residential towers with both student accommodations as owner-occupied flats. At first glance, this may seem like a positive step toward addressing the housing shortage in Maastricht. However, the reality is that shutting down LBB is yet another example of placing commercial profit before the well-being of the city. The new apartments are unlikely to do anything for the problems faced by those affected by the housing crisis. Instead, they will most likely be occupied by people with the financial means to do so and further widen the gap between the haves and have-nots.

In a city where free spaces are scarce and the existing venues are either expensive or located far from the city center, excluding those with limited budgets, the preservation of LBB becomes even more critical. LBB is more than just a building. It is a sanctuary for those seeking refuge from the commercialized world outside. Within its walls, LBB hosts activities that enrich the lives of the Maastricht community. It is the home of the Foodbank, fighting food waste and contributing to making sure that no one goes hungry. It is a hub for art exhibitions, showcasing the works of talented local and international artists. It is a venue for parties and concerts at affordable prices, welcoming not just students but everyone. By shutting down Cultural free zones, we put culture itself under threat by making it a luxury for the privileged. Maastricht deserves a future where culture thrives and everyone can participate in enjoying it. Landbouwbelang represents one of the last remaining spaces in Maastricht that is free from commercial interests and open to all, therefore we should put our best efforts into protecting it.

Line-Marie Eichhorst,
second-year student at UCM

series a room of one's own

“Now that I have more freedom, I'm enjoying it again”



Photo: Ellen Oosterhof

Jasmina Kajtazović (21, Slovenian-Bosnian), a second-year bachelor's student of Psychology, pays 340 euros per month for a 12 m2 room in Heer, a neighbourhood in Maastricht.

“Shoes off, please”, says Jasmina Kajtazović when you enter her room. It's an Eastern European custom, she explains with a laugh. “When I first came here, I was surprised that Dutch people don't remove their shoes before entering a home. It helps keep your house clean and it just feels nice. It's customary in

Slovenia and Bosnia.” Kajtazović is familiar with both countries. Her parents are from Bosnia, but she was born and raised in Slovenia. Her father moved there for work when he was seven-teen; her mother followed him there after the Bosnian War in the 1990s. “When people ask

me where I'm from, I find it hard to explain. My passport says I'm from Slovenia, but I don't feel completely Slovenian. I prefer to call myself Bosnian, but I haven't spent much time there and I don't speak the language as well – I speak a mixture of Bosnian and Slovenian with my parents. It's a shame that

Dutch people tend to lump together the Balkan countries when they're so different.”

Scotland

She moved to Maastricht two years ago. Ever since she was a teenager, she knew she wanted to study abroad. “I figured it would be a valuable experience. I deliberately chose an internationally oriented secondary school that offered a lot of classes in English.” She'd initially set her sights on Scotland, but due to Brexit, she ended up in Maastricht instead. “The university has a renowned psychology programme. And someone I knew from secondary school was already a student here, so she was able to give me a lot of practical advice for the move.”

She secured accommodation early, in June, after taking a virtual room tour. “I was very happy about it, all the more so when I found out that a lot of students didn't have as much luck finding a place. One of my friends from secondary school went to study in Groningen. She told me she was staying on a farm way outside the city with twenty other people.”

Leaks

Kajtazović didn't have a long wish list; she mostly just needed the room to be close to her faculty in Randwyck, “so I'd be able to walk to class”, she laughs. “I've never liked cycling, especially since an unfortunate school trip where I was the slowest of the group and also crashed a few times.”

Several large water stains on the ceiling serve as a reminder of the rocky start she got off to in her new home. “The roof was being replaced at a time when it rained a lot, leading to leaks and mould.” The problem has since been resolved, and she likes living here. She gets along well with her two housemates (“There's a third one, but he's a great mystery – none of us have seen him in two years, but sometimes his light is on”). “They're from Bulgaria. There's a surprising number of similarities between our cultures, from music to traditional foods and drinks.”

On display

The room's walls are decorated with her own drawings and paintings, most of which feature faces. “I didn't like sports much as a child, but I enjoyed being creative. I started by drawing celebrities' faces – it's easy to tell whether you got it right.” Her parents, impressed by her talent, showed off her drawings to friends and family. They asked her to draw their portraits as birthday presents. “It made me lose my motivation. I was often told that my drawings weren't accurate enough and that I had to start over. Now that I have the freedom to draw what I want, I'm enjoying it again.”

Her work was recently on display for the first time ever. Five of her drawings were displayed in the Sustainability Hub at a fundraising event for victims of the earthquakes in Turkey and Syria. “I was very nervous about it. When I agreed to it, they weren't finished yet, so I had to work hard to get them done in time. It was a great experience for me, confirming that I can do this on my own. The reactions were very positive, too.”

Dennis Vaendel

UM to combat residual waste

Special containers for biodegradable waste and better communication

Blue for paper, orange for plastic, and grey for residual waste. The bins have been at Maastricht University for years, but separating waste is not always done properly, an analysis by waste management company PreZero showed. UM hopes to tackle the problem with green containers for biodegradable waste and better communication.

Tekst: Cleo Freriks

PreZero delved into the university bins and arrived at the conclusion that almost 50 per cent of the residual waste consisted of recyclable material. Such a shame, because waste from these bins is burned in incinerators. A project group at UM is now looking into how things can be improved.

A lot could be achieved especially where it concerns leftover food, PreZero concludes. At the moment, that is only separated for collection if there is an official kitchen (for example at the student cafeteria). So, there will be biodegradable waste bins, starting at the Faculty of Arts and Social Sciences. Later, there will be biodegradable waste bins in more locations, but not everywhere, only in those places where enough fruit peels and leftover food is disposed of. "It will be tailor-made", says Peter Hamers, waste contract manager at UM. There is no need to worry about stench and flies. "The bins will have lids and will be emptied every day."

Tissues

The biggest 'culprit' in residual waste is 'recyclable' paper tissues in the toilets to dry your hands. Why are they not being dealt with? "There is currently no processor for used paper tissues. They are not allowed in the regular paper bin. At a certain point, you can't recycle paper anymore and tissues are more or less

in the last phase," says Hamers. But it may be possible in the future. "A pilot project is currently being run at Vrije Universiteit Amsterdam to collect tissues separately," says Céline Knubben, project manager at PreZero.

Pizza boxes

Then there are the other bins: orange for clean plastic containers and beverage cartons and blue for waste paper and cardboard. Plenty goes wrong here as well, says Knubben. "Pizza boxes in with paper – we can't do anything with that. The grease from the pizza soaks into the cardboard, making it impossible to recycle." Sometimes, one product can disrupt everything.

"There is an energy drink that is popular among students, which comes in a glass bottle," says Rabbe Dormans, environment and sustainability advisor at UM. So, we find glass in residual and plastic waste. "We have asked the catering company to offer a competitor drink, so that students could buy it from them instead of from the supermarket." FASoS coffee bar Bandito Espresso, who also sells drinks in glass bottles, came up with a creative solution: they collect the bottles and the

cleaners then take them to the bottle bar in exchange for a free cup of coffee.

Clean waste flows

UM is striving to have 55 per cent of its waste recycled in 2026; at the moment this is 42 per cent. All bins will get signs stating what you can and can't dispose of in them. "It is confusing at times," says Hamers. "In the municipal bins, you can throw cans together with plastic packaging and drinks cartons, but since this year you can't do that in bins of organisations and businesses, like UM." Knubben does have a general tip: when in doubt, throw it in the residual waste bins. "Then the waste flow remains clean and it can at any rate be recycled." She would like to dispel a myth: "If the flow is clean, it is always recycled, we never throw all waste onto one pile as people sometimes think."

In the end, reducing residual waste is not just about recycling, says Knubben. That is why PreZero has also given sustainable purchasing workshops at UM. "Refuse, reduce, reuse, recycle. Don't grab five tissues, you can dry your hands with two as well. Bring a bottle of water from home, reuse packaging for something else. Take a critical look at what you buy."



The card was never sent

A lot has been written and said about (sexually) unacceptable behaviour at UM. Lately, as *Observant* wrote, two professors from the Randwyck faculties have been dismissed by Maastricht University because of it. At the Law Faculty, as has been reported, two academic staff members have been punished with disciplinary measures. Are these four persons only the tip of the iceberg? We don't know.

I talked to friends about the issue, some of whom work at UM, some of whom study at UM, and almost everyone told me about experiences that they at least thought to be odd or disrespectful. One incident that really shocked me happened around a year ago. Some friends and I sat with sangria and baked potatoes in the city centre, when my friend, then in the last year of her bachelor's, told us that she had been hassled by her thesis supervisor during their individual meetings at an inner city-faculty. Whilst she was hoping for guidance and ideas for a possible theory she could use in the thesis, her supervisor sat directly beside her, with his legs wide open, and stared at her. He also 'accidentally' touched her hand several times. At the end of the meeting, he said: "We should discuss this over a drink, are you free tonight?"

It saddened me, and I couldn't believe it. Not because I didn't believe her. But this, at UM? Really? Inside 'my' community? Just several hundred metres away, at another faculty, an academic staff member, as I heard from an insider, has a special nickname behind his back: 'sexy X' (the X replaces his first name here).

Another academic staff member from the same faculty is allegedly known for asking students for specific acts in exchange for a grade. In one case, this supposedly led to an impregnated student. The usual digital card sent to his colleagues by the department, congratulating on the new family member, in this case was never sent. Sadly, and this is an aspect that I did not read in this debate so far, the latter case led to some scholars voluntarily quitting – they couldn't take it any longer.

Soon, as I heard, in some faculties there might be a mandatory course about social behaviour for academic staff. Does a senior member of staff really need lessons in social behaviour? That says more than a thousand words. There's a saying that is basic, but very helpful, in my opinion: don't fuck the company. Maybe that should be part of the training.

Simon Wirtz,
master's student at FASoS



Soil research for Einstein Telescope enters into new phase

SOLVING PUZZLES AT A DEPTH OF 250 METRES

Will the billion-euro Einstein Telescope project come to Limburg? The decision will be taken in about two years' time. An important question is: how suitable is the soil for the construction of an underground detector with a length of many kilometres? A large-scale study should provide clarity. "This is a very complex puzzle."

Text: Dennis Vaendel **Photo:** Observant **Illustration:** T. Balder/Nikhef

"It is as if you just put a roll of peppermint into a bottle of cola," says geologist Bjorn Vink, pointing to a drilling installation several metres high that spews out rocks under great pressure. This colossus has been here since the end of May, in a field near the Walloon village of Aubel, a few kilometres from the Dutch border. The objective is to take a 'bite' out of the soil, to determine what it looks like deep down. The counter stands at ten metres at the moment, but ultimately the drill will have to

reach at least 250 metres. With a diameter of no more than forty centimetres, it will only be a pinhole in the landscape.

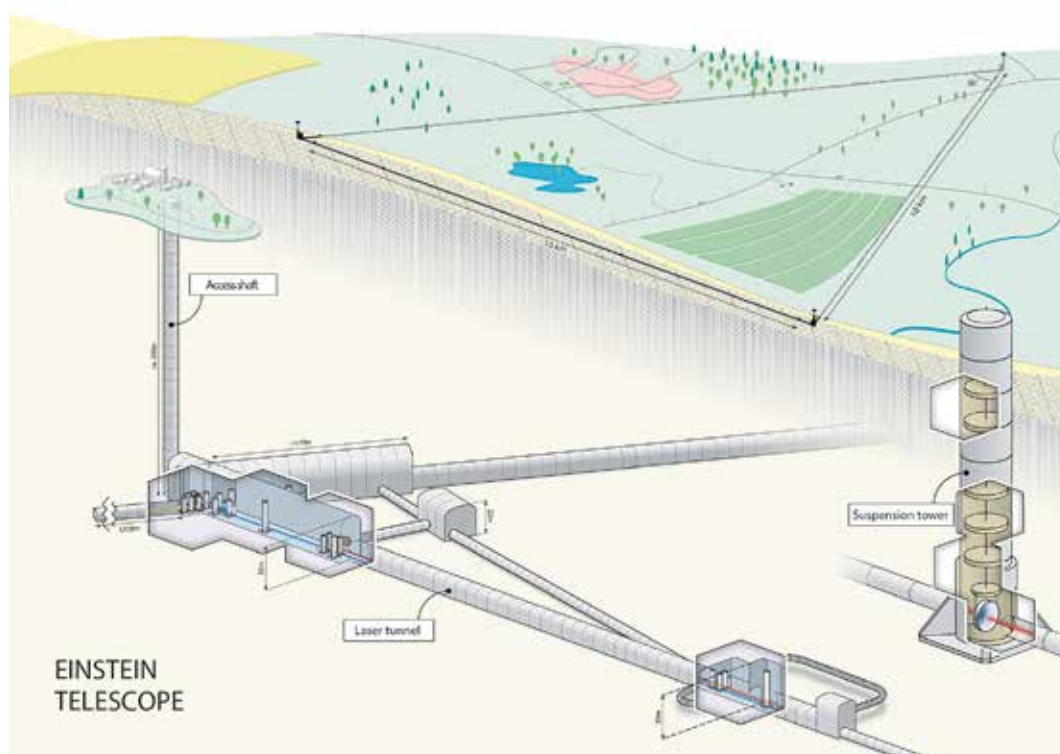
The drilling kicks off a new phase in the soil research for E-TEST, a joint project of the Netherlands, Belgium and Germany in preparation for the possible creation of the Einstein Telescope in the border region. This observatory for minute vibrations in space-time (so-called gravitational waves), which will cost a few billion euros, should throw new light on

the universe.

The decision whether the underground detector will be built here or at the competing location in Sardinia, will be taken in 2025 or 2026. Both locations boast favourable geology: 'quiet', almost vibration-free soil, in which the sensitive equipment can do its work undisturbed. The South Limburg hills owe this to a combination of a soft upper layer – the marl – with a hard, rocklike layer underneath, which together dampen the noise above ground.

But how suitable is this soil for building a gigantic system of tunnels, for a triangular detector with sides as long as ten kilometres, at a depth of two to three hundred metres? And what is the exact spot where this is supposed to happen? Nobody knows for sure. "It is an area that has hardly been investigated," says Vink, who works at the Einstein Telescope project office at Maastricht University and is involved with E-TEST on behalf of the scientific institute Nikhef. Around the edges,





What Einstein Telescope should look like: a triangle with sides of ten kilometres at a depth of roughly 250 metres

a certain amount of knowledge has been gathered in the past as a result of mining, but the search area itself – roughly the triangle between Aachen, Liège and Maastricht – is still a blind spot.

Tropical sea

A number of previous studies, including drillings in the villages of Banholt and Epen, have led to some insights in the past few years. “But ultimately, that was mainly about testing the technology. Now we are ready to discover how things really are.” Gathering pace is really necessary, because the bid book – and so a definite idea of what is possible in this area – must be ready in two to three years’ time.

Soil drilling, like here in Aubel, plays an important role. The current drilling is commissioned by the University of Liège, but soon the ET project office will direct the drilling of “initially ten, but most likely many more” holes of hundreds of metres deep in different areas in the region. “Of course accompanied by the necessary permits and communication with the surrounding area,” Vink is quick to add. With each ‘pinhole’, the local situation will become clear, and the underground map of the area will become more detailed.

“This is an exceptionally large hole, because this is where special measuring equipment will be lowered,” says Vink, trying to make himself heard over the noise of the machines. The other drill holes will be narrower, less than ten centimetres in diameter. “Like that one there,” Vink points to a hole a few metres further

along, which was drilled last week and has now been covered by a pole (“for the safety of the horses that will return to the field after the investigation has been completed”).

That is where they met with an instant surprise: at a depth of 27 metres, there appeared to be a layer of bluestone. “The material used for the famous bluish grey windowsills, but for example also for parts of the Sint Servaasbrug. That is a very old layer, formed approximately 340 million years ago, when this area was located more or less at the equator. There was a shallow sea here, as this type of stone comes from sedimentary deposits at the bottom of such waters, which were bursting with life.” At previous drilling locations a few kilometres from here, they did not find bluestone. “I also suspect that you won’t find it under the hill a hundred metres further along. In those places, there was most likely an island or a cliff. Moreover, this layer appears to dive lower into the ground a little bit further along.”

Crashing cars

It illustrates why the study is so challenging. Not only is the ground here a patchwork quilt of various layers – each with its own characteristics in terms of composition and firmness – but also varies strongly from one location to the next. A crumple zone, is how Vink describes it, as if Belgium and the Netherlands are two cars that have crashed into one another. “Because of the collision between the African and European continent, this area contracts slowly, a process that has been

going on for many millions of years. Pieces of land are constantly being pushed upwards and downwards. Older stone layers slide over younger ones and vice versa. Layers that were once flat are now chaotically curving throughout the soil. They are even non-existent in some places.”

So, not every layer is suitable for accommodating the Einstein Telescope. “Ultimately, we are looking for certain types of hard stone. It is more difficult to drill into, but it is very strong. Additional support will not be necessary. That is especially important for the three vertices, for which large halls have to be drilled. The challenge is finding three locations where the ‘good’ layers are at the same level of about 250 metres, and then also approximately ten kilometres from each other, so that the tunnels (for the sides of the triangle) fit exactly in between. A complex puzzle.”

Crevice and caves

To make things even more complicated: there is underground water flowing everywhere. “In some places, these streams come to the surface as wells in the landscape, but they can also be really deep. Besides, they are often connected to each other between various layers in the ground. You want to map all that out. Just like crevices and caves, which are often found in the transitional areas between the layers due to collisions and erosion in the past. During the drilling for the tunnels and halls, you want to come across as little as possible. Pumping water away and strengthening or filling in the

crevices is expensive and labour-intensive.” Ultimately, all these elements will come together in a large 3D model of the soil, which the tunnel designers can use to start and put the puzzle together. Vink: “When you combine all the ‘pinholes’, you can simulate how this area has ‘danced’ over the past hundreds of millions of years, and estimate what the soil looks like in other places.”

Drones

This information will be supplemented by a series of ‘tools’ that will carry out work above ground. Among them so-called ‘vibrotrucks’: vehicles that use a vibration plate to briefly shake the ground. Every layer in the ground reverberates these vibrations in its own way, allowing sensors on the surface to indirectly determine the composition. A column of such trucks passed through the Heuvelland last year; soon “more economical, smaller and more accurate” versions will follow, said Vink. The use of drones is also being considered. “These will hover above the surface to measure how minerals in the ground react to an electromagnetic field. The strength of the signal indicates the concentrations of these minerals, and therefore the type of stone.”

Even with a 3D model of the soil, not all the pieces of the puzzle have been collected, however. “Vibration sensors at the bottom of the drilled holes will identify sources of ‘noise’. Things like vibrations caused by windmills or motorways, but for example also by a forest when it is very windy. As well as by earthquakes: in this area minimal movements can occur along a fault line. It is not insurmountable if your tunnel is on or in the neighbourhood of such a fault line, but it does require more maintenance and repairs.”

Transporting soil

Then there is the logistics above ground. “During construction, enormous amounts of soil – something in the region of a few million cubic metres – will be brought up to the surface. This will be excavated at one or more of the cervices. We are already thinking about that. Can you transport this here efficiently, for example by the presence of a train tracks in the area, or can it be processed on site, without causing too much of a nuisance to the surrounding area and pollution of the landscape?”

So, puzzles for the experienced. What if the soil turns out to be more complicated than one had hoped? Will the whole project be cancelled then? “No, technically you could almost always build the detector anyway. But in bad layers of soil, it will be much more expensive. In that case, you have to ask yourself: is it worth it? The geology is after all the most determining factor for the total cost of the project.” But it’s not that far yet. First, a great deal of knowledge has to be collected.

“YOU NEVER KNOW WHAT YOU WILL DISCOVER”

What if Limburg doesn’t get the Einstein Telescope? Will the whole soil study have been a waste? No, absolutely not, says Vink. The soil study will also provide the necessary ‘incidental discoveries’. “Creviced rocks and underground streams of water are awkward for us, but for others it is very interesting.” For example, for extracting drinking water, or using the heat of this water as a sustainable source of energy – the so-called geothermal heat.

In times of scarcity and climate change, this is an added bonus. “The necessary rocks and technologies are relatively easy and cheap to test here. Elsewhere in the country, these layers are located at a depth of several kilometres. Then you need to be sure that it works, before you start drilling.”

Projects concerning conservation could also benefit, says Vink. For example, knowledge about minerals and con-

tamination of the soil and spring water is useful for the protection of vulnerable plant species. “Plus, as always with these types of large projects, this study could produce new and innovative techniques or measuring equipment, for example, in the field of tunnel construction. You never know what you will discover.”

But fundamentally it is also very interesting, Vink concludes enthusiastically. “What makes the area complex, is also

what makes it fascinating. The soil is a kind of film of the history of this region.”

The first geological discoveries have already taken place. “Near Epen, we found the oldest rock that appears in the Netherlands at surface level. With 328 million years, it turned out to be almost four million years older than the previous record.” In the process, Vink also picked up a fossil of a plant, the oldest fossil discovered by hand in the Netherlands.