

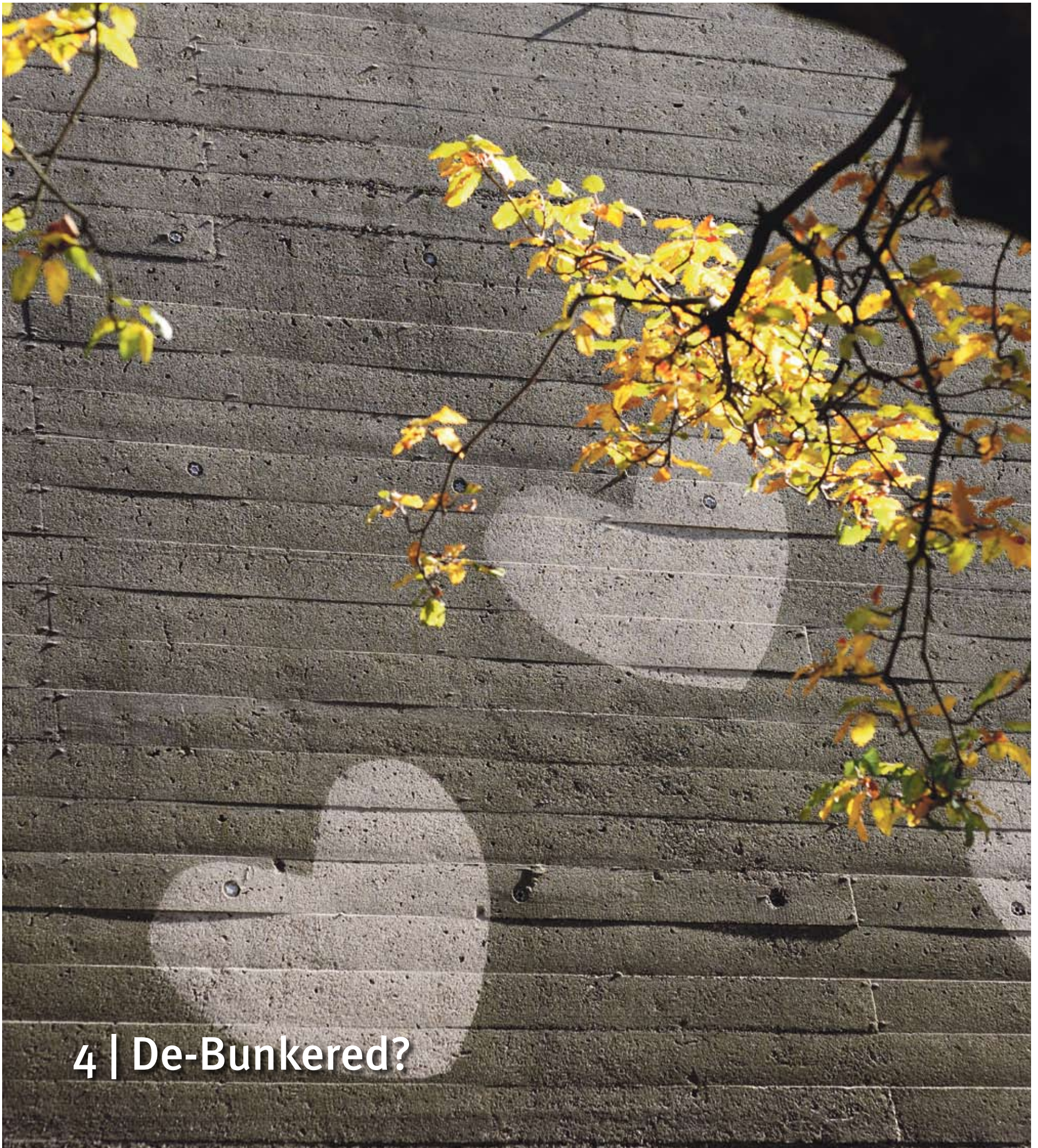
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# Cursor

October 6, 2011 | year 54



Biweekly magazine of the Eindhoven University of Technology  
For news: [www.tue.nl/cursor](http://www.tue.nl/cursor) and follow tuecursor on Twitter and Facebook



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### Trading places

Goodness me, we had come in at first place yet again! Where did we manage to nab top spot this time, you may wonder somewhat listlessly. Being a knowledge institute based in the smartest region of the world, we can't but top the charts every now and then. Not to worry though, it's not that spectacular this time. Last week, we were named the best university of technology in the Netherlands by

newsmagazine Elsevier. Of the 2,500 professors questioned, 1,350 thought we were the best of the three. By creating the extra category, you'd almost forget we have only three. Last year we saw Delft barely overtaking us, but this year we know how it feels to be lonely at the top once again. A bit sad for our buddies in Twente, seeing they received zero percent of votes. That's zip. Still, I don't think they mind, since they had the highest influx increase of first-year students this year. Don't those freshmen read Elsevier? Anyway, I'm ready for the next ranking. Today, October 6, Times sized us up and compared us to international institutions. Can't wait – we used to be in 126th position...

### The Bunker

The Bunker. Just say the name and entire generations of students will start spilling the most wonderful memories. They'll tell you about the parties in AOR, the cheap beer, the university restaurant's amazing fried rice on Thursdays, tentatively making each other's acquaintance at the Intro, the Christmas parties. It may not be for another few years, but there's a good chance the Bunker will become student-less. Such a shame. Still, the memories remain. We recorded three stories from people



who have a special connection with the concrete colossus. We could easily have published a hundred.

**TU/e** Technische Universiteit  
Eindhoven  
University of Technology

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## ◀ Rewwwind www.tue.nl/cursor

Our Rewwwind feature provides you with snippets of last week's news. What happened online after the previous Cursor magazine was published?

### First Dutch Prize for ICT research to Bettina Speckmann

October 4, 2011 - The first-ever Dutch Prize for ICT research has been awarded to dr. Bettina Speckmann this year, associate professor at the Department of Mathematics and Computer Science at TU/e. She's researching the mathematics behind

geographical information systems and the computer science behind cartography, among other things. She won the prize for the multitude of results and the combination of both in-depth fundamentals and applicability-oriented research.

### Part-time professor Biomedical Engineering wins Ig Nobel Prize

September 30, 2011 - Herman Kingma, part time professor at the Department of Biomedical Engineering won an Ig Nobel prize this week. He and several French authors received the prize for

Physics, because they've explained the dizziness of discus throwers. The Ig Nobel Prizes are awarded for research that makes people "laugh first, and think later".

### TU/e reclaims top spot in Elsevier survey

September 29, 2011 – According to the new Elsevier higher education special, TU/e is the best university of technology in the Netherlands. Eindhoven reclaimed

their title at the expense of Delft. Utrecht University is the best all-round university, according to 2,500 professors and associate professors.

### Executive Board: 'Intro Cantus should remain'

September 27, 2011 - TU/e should cherish its Intro Cantus. University secretary ir. Harry Roumen and Executive board member mr. Jo van Ham expressed these sentiments towards dr. Karen Ali, head of STU, who will be concerning herself with the annual introduction week and a possible collaboration with Fontys

over the next few months. Last month, word was going round that this year's Intro was the last one ending with a major Cantus, but Van Ham stresses: "The Cantus is a beautiful and true TU/e tradition that should be cherished. I think students attending the Cantus will still remember that afternoon thirty years from now".



## ◀ Flashback

### Hal Hoofdgebouw 1963 versus 2011

It's already middle aged, our Hoofdgebouw. It's seen 48 summers and a multitude of exhibitions. The place harbors expos displaying art by our own employees. Every year, photos picked by the World Press Photo judges are put up. Industrial Design's Project Market will be set up here, and entrepreneurs that don't fit into the Auditorium on Bedrijvendag (Company Day), are asked to set up shop right here. The official opening on September 19, 1963 was a festive one. Conductor Hein Jordans has the Brabant Orchestra play a concerto. The stairs are different, and the footbridge to the Auditorium is still a dead end. After all, it was only constructed a year after. Oswald Wenckebach's De Technische Student (the Technology Student) listens in, faced away from the orchestra. He seems to be the only student present, because apart from some ladies' hats, the room is filled with grey and bald spots. (NS)

Photo (old) | Archief Erik Geelen  
Photo (new) | Bart van Overbeeke



## ≡ Clmn Non-linearity of life and my TU/e teachers



I still remember my first class at TU/e as if it was yesterday. It was a lecture of 'Physical modeling in Control Systems' taught by prof. Okko Bosgra. The first topic was linearization. After tiring us with weird formulae, prof. Bosgra concluded the lecture by saying: "Linearization is easy to understand and handy to use. However, don't trick yourselves. Be ready to accept fact that real life problems are highly non-linear". Now, one year later, I passed a lot of exams and started my internship, and prof. Bosgra is retired. Remembering my experience, I realize how right

he was. People are ready to trick themselves by using linear expectations. If the day before yesterday was bad and yesterday was awful, we tend to be pessimistic and expect tomorrow to be a catastrophic day. On the other hand, if for a long time everything is going well we turn into extreme optimists and tend to be euphoric about future expectations. Our psychology can't accept non-linear curves such as sinusoids. In other words: we are ready to accept linearity rather than more complicated non-linear patterns.

Looking back, I remember various events of my 'non-linear' first year as a Master student. It was full of ups and down. Good grades were followed by failed exams. Dutch-style exciting parties were followed by strong hangovers the next morning. Sweet feelings of shared success working on group projects were followed by frustration and conflicts caused by misunderstandings among colleagues. I had a fascinating year, and, yes, it was highly non-linear. I don't know what's waiting for me this academic year. However, I do know that lecturers at TU/e teach not only exhausting and tough courses but also share their invaluable life experience. Thank you for that, prof. Bosgra and all other TU/e teachers!

Sultan Imangaliyev, from Kazakhstan, is a student of Systems & Control, Department of Mechanical Engineering



## Vox Academici

Dr.ir. Seth Brussaard, assistant professor Quantum Technology,  
Department of Applied Physics

# Do neutrinos actually travel faster than the speed of light?

**For a moment, the world of physics was turned upside down when the results of the OPERA study were revealed: neutrinos fired from CERN in Geneva arrived at an underground lab in Italy located 730 kilometers away 60 nanoseconds earlier than expected. That would mean they travel faster than light speed. Can neutrinos really travel faster than that? Could an error have been made in calculating or interpreting the data? And what about Einstein's theory of relativity that's been tested and tried over and over again?**

It resulted in media frenzy: everyone was talking about the fast neutrino and the possibility of time travel was excitedly debated. TU/e also had a TV crew present to ask staff and students about the live-stream CERN presentation. "The neutrino is a very exciting topic at the moment", says Seth Brussaard, assistant professor at the Coherence and Quantum Technology group of the Department of Applied Physics. "Should these results prove correct, we'd be at the threshold of a physics revolution." "I watched the live presentation and must say I'm quite impressed.

The measurement in itself is austere, but it's mainly about the ways in which possible systematic measurements and interpretational errors have been covered. That's what the entire article and presentation are all about: 'Did we overlook anything?' Some students had never attended a presentation this boring and left after an hour or so. Still, an extraordinary discovery calls for extraordinary evidence."

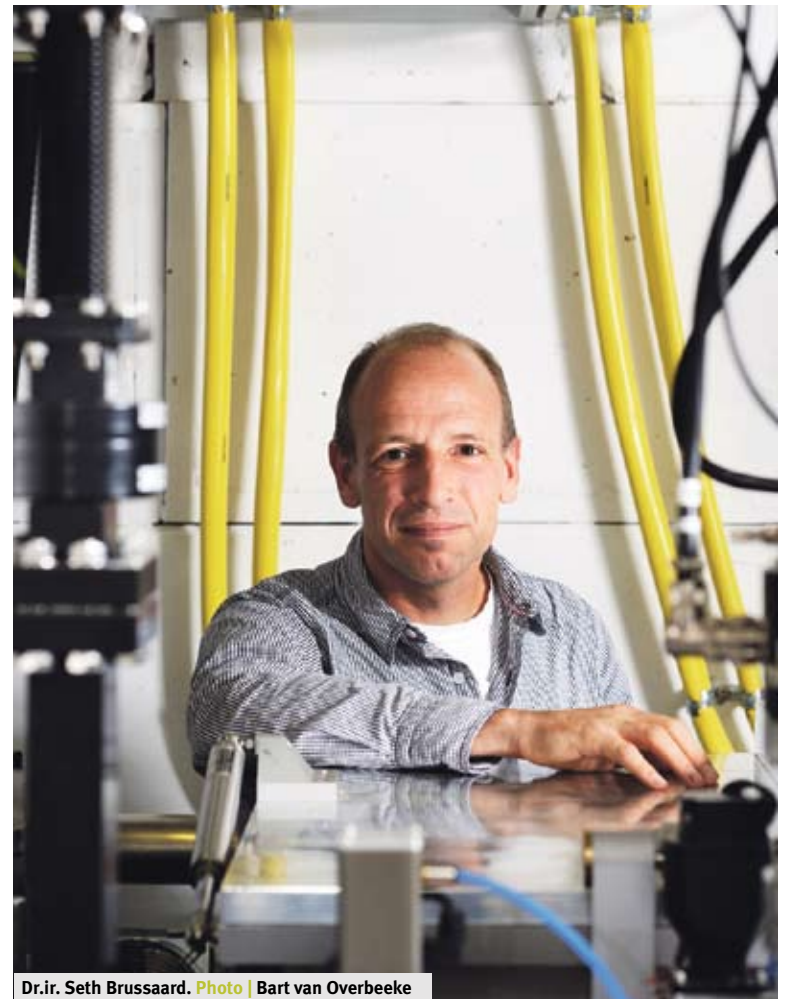
"The neutrino has always been an outsider in the standard particle model. The particle, which has practically no mass, can act up. It can adopt characteristics of other particles, but it can always revert back to its old self. And since it barely interacts with other materials, it's very hard to conduct measurements with. From the 10 trillion protons that were needed to create and fire neutrinos, only 16,000 neutrino events were measured in Italy. In two years. But they all arrived significantly earlier than had been calculated."

"Measurements like these require an extremely delicate approach. However, there are two major uncertainties: time

and distance. To determine the time, the atom clocks need to be calibrated perfectly. A new time system, to an accuracy of 8 nanoseconds, was used for this study. In previous experiments time had never been recorded that accurately. As far as distance is concerned, they claim it can be determined to a maximum deviation of 20 centimeters. These parameters rule out a possible measurement error, according to the researchers."

"Next, the signal has to be detected and passed on to the computers, which is another uncertainty. It's hard to comment on this if you haven't conducted these experiments yourself. It would be best if the experiment were to be repeated at different locations, with different equipment and different people. They're already working on it in the US and Japan."

"Wouldn't it be most spectacular if it turns out to be true: faster than the speed of light? We'd have to start working on a proposal for a new theory, and refute counterarguments. By the way, we won't have to dispose of Einstein's theory of relativity right away.



Dr.ir. Seth Brussaard. Photo | Bart van Overbeeke

Rather, we should think about modifying it. The same thing happened with Newton's classic laws of mechanics based on an apple he saw falling from a tree. When Einstein introduced his theory, the apple still fell, yet we were able to calculate the process much more accurately... A new theory always comes with opportunities for new applications. The theory of relativity paved the way for

nuclear fission and nuclear fusion. Who knows what may come next... It'll probably be several years before we get to see any results of new experiments. And some studies have shown that neutrinos from a supernova explosion 'merely' travel at the speed of light after all. Nothing is certain. But until it is, we physicists can let our imagination run wild!" (NT)

## Mystery Tour 2011

**122** student board members had joined at the invitation of the Executive board, plus 8 deans and 7 study program managers

**4.13** minutes was the time it took to try and worm the day's budget out of the organization. After that it proved useless to continue our inquisition. "The Mystery Tour exudes luxury and we intend to keep it that way", said the Executive board.

**32** in-depth questions were submitted by student associations prior to the tour, 13 of which have been discussed. Many questions were disposed of by expressing the wish to return to these later in a more fundamental discussion.





# Students de-Bunkered?

**Fantastic student parties, fabulous performances, many thousands of liters of beer, profound discussions. The Bunker has been the eminent meeting center for Eindhoven students for many years. The question is how long this will continue, considering that student associations are gradually moving out.**

Student association ESC can, if things go right, move into the inner city halfway through 2012, SSRE is desperately looking for premises in the city center and only Demos wants to stay - while this is still possible. For the cultural associations, accommodation on campus is being sought. Although it may take a while yet, this could just be the end of the bubbling student life as it has unfolded in the concrete colossus at Kennedylaan for many a year.

Several reasons may be mentioned for the approaching exodus. ESC and SSRE think that, when located in the city center, they can become more significant for Eindhoven as a university town. The cultural associations are looking for a place on campus, so that culture can form a greater part of student life at university. What will happen to the Bunker in future is still an open matter. University secretary ir. Harry Roumen informs us that the Executive Board advocates the move to the city of the general associations and of the cultural

associations to the campus. "For now we cannot be specific about a period yet. When the time comes, we prefer to sell the building to a new party. The decision will also depend on market developments." Whether the spots to be vacated will be filled is not known yet. At any rate there is still sufficient interest in a location in the student complex. More than that - there is a waiting list.

**"What will happen to the Bunker is still an open matter"**

The Spatial Quality Committee has nominated the Bunker for listed-building status, being of opinion that it represents an important work by architect Maaskant. This status would imply that plans for alterations or demolition should be tested against listed-building aspects before permission may be granted. For repair work on listed buildings a subsidy scheme is available. The municipality has held a survey, the outcome of which will be used by the Spatial Quality Committee to formulate a recommendation for the Executive Board. Once the Board agrees, listed-building status may have been granted even before the end of the year, according to a spokes-

woman. However, the process will take longer in case interested parties raise objections. The spokeswoman thinks that the Bunker has not been granted such status earlier, because it is a rather young building. Not until recent years has the awareness of the heritage value of postwar architecture been on the increase. Harry Roumen says that he would not really welcome the actual granting of the listed-building status. "We have had some bad experience with that. Alterations and such tend to become more difficult then."

Fourteen Master students of Architecture, Building and Planning have just started a project concerning the Bunker. They are reviewing the architectural, structural and sustainability aspects of the building. In addition, they need to come up with a concept for a new designated use. Project supervisor ir. Guus Timmermans finds the Bunker an interesting building. "It is a modern approach to make buildings sustainable. That was hardly a consideration in the past. The Bunker is barely insulated at all and contains a lot of single glazing." The students are to wind up the project in January 2012. (JVG)

Photos | Bart van Overbeeke

**What do you feel should happen to the Bunker? Send us your ideas via [www.facebook.com/tuecursor](http://www.facebook.com/tuecursor).**



## The Bunker in a nutshell

The first drawings of the Bunker date from 1966 and in 1970 the building was completed. The concrete colossus was built by Maaskant, Van Dommelen, Kroos and Senf Architects. Student associations ESC, SSRE and Demos were its first occupants, while the building also provided accommodation for the student restaurant and the AOR - the General Meeting Room. The three student associations were at the cradle of the café/ discotheque the AOR in 1964, when they wanted to create a common meeting place for students. During the first six years the AOR was still located in the city center. The Bunker became conspicuous in the 1970s through the painted slogan 'Happy slaves are the worst enemies of freedom'.

The student café soon drew busy crowds. Beer flowed generously -so generously indeed that milk tanks were taken over from Campina that were converted to beer tanks. In 1981 four one-thousand-liter tanks were installed, which the students painted to look like cows and renamed Marta 1, Berta 2, Drika 3 and Klara 4. A funny anecdote from those days: the Red Hot Chili Peppers performed in the Effenaar on 18 February 1988. This then still relatively unknown band from LA wanted to have a beer in the AOR after their concert. However, they were refused admission because the doorman did not know the group.

In the early 1990s the AOR was generating huge turnovers. After theme park de Efteling the student café was alleged to rank as number two on the list of buyers of Dommelsch beer. Well-known artists managed to find the way to the AOR. Thus, the artists who performed there included Herman Brood, Youp van 't Hek, De Dijk and Doe Maar.

Meanwhile students were spending more and more time on sidelines, sports and other activities and the surge towards the Bunker declined. In 2005 the AOR finally closed its doors. The student restaurant had been closed before that time, in 2000. In 2007 the student cultural associations settled in the premises at Kennedylaan.





# ‘Military equipped with communication methods these days’

**You don’t automatically win a war by merely employing lots of modern weapons anymore. These days, the level of information determines the course of the battle. Mr.dr.ir. Lambèr Royakkers is researching how a network-enabled soldier receives information, to what extent technology plays a part in that, and how they interpret and use the data. Royakkers is associate professor of Ethics of Technology and associate professor of Military Ethics at the Netherlands Defense Academy (NLDA).**

“Take Al-Qaeda. Its members are hard to find, since they can barely be distinguished from civilians - who often carry guns and dress the same. You have to be well-informed to actually know where they are.” Royakkers uses this example to illustrate that the military is no longer facing a clear and unambiguous enemy. “Military conflicts are no longer fought between states that have their respective armed forces fight each other. The Gulf War in Iraq was the last conventional war.”

According to the associate professor, warfare tends to be ‘asymmetric’ these days, with a conventional (western) army equipped with modern technology fighting rebels, which are often undisciplined warriors that can’t be recognized as such. They answer to warlords and carry out operations that don’t comply with the rules of humanitarian laws of war. Royakkers mentions roadside bombs as an example. “Right now, it’s mostly about situational awareness, being well-informed about the situation so you can properly distinguish between warriors and civilians. What’s important here is winning people’s hearts and minds, an approach the Dutch are known for.”

**“What’s important here is winning people’s hearts and minds”**

The soldier’s job has not become any easier. Royakkers says there’s been a military revolution around the year 2000. “Hierarchy has gone for the most part. More and more information has become available over time, and soldiers are expected to assess that data themselves and act ad hoc. It calls for a greater responsibility. Today, soldiers are armed with means of communication”, says the associate professor. The network that helps soldiers through sharing information as well as cooperating is known as Network-centric Warfare, although Royakkers prefers Network-enabled Operations. “We no longer fight conventional wars, but rather go on peace missions or stability operations.”

The associate professor is researching what ICT devices are used to provide soldiers with new information, in what way said information is presented, how they assess the images or documentation, and how they act upon these. What competencies are required of a soldier? Two years ago, the Netherlands Organization for Scientific Research (NWO) approved his research proposal. “It’s important to know how information is shared and interpreted. The ever-closer cooperation between different alliances also raises more questions: how reliable is the information a soldier receives from someone? Can the other be trusted? How are they supposed to read the information? Is the soldier’s eventual decision dependent on whether they received the information by phone, the

Internet, or in pictures? To what extent can technology contribute to a morally responsible decision? ‘Moral’ here refers to the soldier’s reflection: did they critically evaluate the situation and make a deliberate choice? After all, it’s often a matter of life and death.” There are many advantages to the ever-intensifying cooperation through networking technologies, but there are some downsides, too. PhD drs.ing. Christine van Burken has been mapping the pitfalls of Network-enabled Operations. Her conclusion: one of the advantages of Network-enabled Operations that is commonly mentioned is the fact communications and decision-making run more smoothly, and responsibilities are passed down to a lower level. However, sometimes the contrary proves to be true. Royakkers: “It’s not just officers and other high-ranked military people who have access to information. Soldiers, people with the Department of Defense and the government also have data. That may be beneficial, but it definitely has a number of disadvantages, too. When Bin Laden was killed, the operation was watched live from the White House. That puts quite some pressure on the soldiers. Apart from that, it can be hard to tell who has the power of decision.”

It’s one of three pitfalls isolated by Van Burken: first, there’s the frustrating of communications, in which partners with varying interests may hinder each other. The second pitfall is the so-called predator vision, by which she means the risk of tunnel vision: observers lose sight of the bigger picture. Another danger is the misinterpretation of video images, since they’re not always crystal clear. As an example, she mentions the Kunduz Airstrike, a 2009 air raid in Afghanistan in which ninety innocent civilians died. On film, villagers carrying fuel from a truck were mistaken for rebels.

Elaborating on the possible misinterpretation of information, Royakkers mentions the increasing implementation of military robots, in which the US takes the lead. “Every day, thousands of unmanned military objects are up in the sky, yet hardly anyone has considered the ethic aspects. One of the potential problems is that soldiers readily assume any information observed by robots to be correct, especially with robots becoming more and more autonomous and increasingly make their own decisions. Yet the military should of course keep thinking for themselves, and continue to interpret all information

without shifting their responsibilities to technology.”

**“We no longer fight conventional wars”**

Soon, postdoc dr. Bart van Bezooijen and Van Burken will be conducting psychological experiments with soldiers (in training) - possibly in collaboration with TNO. Royakkers: “We’ll provide them with information from various sources of communication, such as the Internet, video images and telephones. We’ll check how these sources affect their decisions. How do means of communications influence the behavior of soldiers? How do they interpret the information received? With the study’s results, Royakkers wants to contribute to the strengthening of morally honorable actions of soldiers within Network-enabled Operations, resulting in changes in their (mission) training. (vG)



When Bin Laden was killed, the operation was watched live from the White House. Photo | ANP Photo