Ten experts speculate on coming challenges

Future genes
Emmanuelle Charpentier’s breakthroughs

Innovators
Design graduates look back

Morality of evil
Lena Berggren examines our darker sides

2065 WHAT THE FUTURE HOLDS
Ten experts speculate on coming challenges
“Through our openness we have developed working environments offering an excellent infrastructure for research in just about all areas – something that promotes world-class research.”

50 YEARS OF VISIONARY THINKING

IMAGINE IF YOU PLEASE: Could Gösta Skoglund, and the others who founded northern Sweden's first university already in the 1940s, had foreseen what Umeå University might look like today and how far their visions had reached, been refined and endured?

Imagine if they could have envisaged the glade at the forest's edge becoming the Umeå University main campus. And how the Umeå Arts Campus would evolve along the Ume River. Two campuses hosting more than 30,000 students and 4,300 employees.

Imagine if they had been able to visit Bildmuseet, the museum of contemporary international art; also known as one of the world's most beautiful university museums and a part of Umeå Arts Campus so gorgeously reflected in the Ume River.

2015 marks Umeå University's 50th anniversary with half a century of collective experience. Yet we remain young, open and dynamic – qualities that characterise the university as a whole. We proudly claim that Umeå University offers an attractive and stimulating environment for higher education. Umeå University is often a prospective student's first choice.

Such success would not have been possible without the university's integrated approach to education and research. Dedicated teachers and researchers, staff members, undergraduate, postgraduate and doctoral students, together they all constitute the structural foundation of the university. The cooperation with various partners both near and far is Umeå University's guiding principle.

THIS IS HOW we thrive at Umeå University, by collaborating internally and externally. By providing physical and virtual presence in the region, in Sweden and far beyond our borders, we give students and employees a chance to be mobile. Through our openness we have developed working environments offering an excellent infrastructure for research in just about all areas – something that promotes world-class research.

Internationally recognized research is important for our competitiveness in an increasingly globalised world. This also lays the foundation for Umeå University's commitment to major societal challenges including energy solutions, health challenges, social and technological development, and the issues raised as part of the expected climate changes.

With this issue of Think, we turn our eyes towards the future. With Gösta Skoglund in mind, we know that a lot can happen in 50 years. Today, we are digging the foundation for a continued development at Umeå University. Our vision is for the university to continue contributing to an even more democratic society tomorrow. If we have reached this far in 50 years, imagine what we can do in 50 years to come.

Think about it! Imagine 2065.
WHAT’S ON 2065

The world in 50 years
Ten experts gaze into the future  8

CRISPR-Cas9
Charpentier’s genial research  17

Column Bi Puranen
50 years – A knowledge base like no other  22

Looking to Vietnam
Contemporary art at Bildmuseet  23

Dark forces
Lena Berggren
Making sense of evil  28

50 years of innovations
Umeå’s history in pictures  33

Innovators
Looking back
Martin Willers  46
Diana Africano Clark  47
Özgür Tasar  48

Linnaeus to biochemistry
Anna Stén’s view of the woods  49

Alumni at large
Umeå University spreads its wings  53

Books
Katarina Gregersdotter’s reading list  54

Column Mikael Berglund
The aquarium and the river  56
SUBJECTS STUDIED AT UMEÅ UNIVERSITY rank among the best 350 in the world. This, according to the QS World University Rankings by Subject 2015, which ranks more than 3,500 of the world’s top universities and colleges by subject.

Art and design was ranked particularly high with Umeå among the top 100 institutions in the world.

In the Times Higher Education 2015 ranking of the 100 best young universities, that have shown that they can match the ancient global elite, Umeå University was ranked 51 in the world.

“Kräkångersnoret” explained

EARLIER THIS SUMMER, Ulf Lundström, a doctoral candidate in the Department of Language Studies, defended his thesis on place names in parts of the municipality of Skellefteå. During his research, Lundström turned to both historical sources and people with knowledge of the places in question. His conclusions are that place names such as Kräkångersnoret, Istermyrliden and the well-known fishing town of Malören not only have Finnish and Sami influences, but have also been affected by Nordic dialects. Lundström has also concluded that around half of the many new settlement names that sprung up in the 18th and 19th centuries had in fact references to the natural world. Kräkångersnoret, now Södra Lövsele, is one of the names explained. It differs somewhat from what the name seems to tell us at first glance:

KRÄK = likely dialectal word ‘krik’, meaning small lake bay
ÅNGER = bay
NOR = narrow creek connecting two sections of open water

Lundström’s thesis is called Settlement names in the parishes of Bureå, Burträsk and Lövånger, and studies of main routes and new settlement names. His studies on the subject will now continue. “I’m now starting to look at the northern part of the municipality of Skellefteå and names such as Byske,” he told the local newspaper Norran in conjunction with defending his thesis.

“Media isn’t social, people are”

UMEÅ PROFESSOR SIMON LINDGREN was one of the speakers at TEDxUmeå 2015, where he discussed how we often have false expectations of social media. “It’s people who are social, not the networks themselves. Social networks can take on an entirely different character depending on the people who frequent them.” Lindgren also showed that many companies and organisations use social media as a means of conventional mass communication instead of engaging in dialogue with their followers. TEDxUmeå is expected to be held again in 2016.

Research with a bite

BITING THROUGH A CARROT requires some force. So much so that our teeth would take a beating if our jaws didn’t rapidly slow our bite once we’ve chewed through something.

Dentist and doctoral student Anders Johansson of the Department of Integrative Medical Biology has tried to identify the system that regulates and slows the force of our bite. The conclusions recently presented in his thesis show that we humans have a very sophisticated muscle control system in our jaws which, for instance, enables us to bite off the layer of chocolate on a chocolate-covered nut without doing any damage to the nut itself.

“We can show that humans can regulate the decrease in their biting force depending on the task at hand. For example, if we have to bite through several layers of hard food, the force is reduced with each layer, in contrast with biting through only one layer,” Johansson explains.
IT WAS ONCE believed that the brain was not particularly malleable. Nowadays it is seen as a dynamic and responsive muscle that can be trained.

“An issue that affects all of us is how we can train the brain and what makes it possible for people to maintain their mental agility well into old age,” says Jessica Körning Ljungberg, Senior Lecturer in Psychology at Umeå University.

An area of research that has truly exploded in recent years is the relationship between multilingualism and memory. Some studies show that multilingualism delays the possible onset of dementia by as much as four to five years. Others are unable to confirm such a relationship. Almost all are cross-sectional studies.

“Yet Sweden has Betula, one of the world’s most extensive memory studies. It is a longitudinal study, and has been under way in Umeå since 1988. A total of 4,700 participants aged 35 to 80 have been tested, interviewed and examined medically and psychologically every five years.”

Wallenberg Academy Fellow Jessica Körning Ljungberg will study the Betula material and collect new data to present the participants’ multilingual abilities and occupation complexity more clearly, the latter being another factor that may help to keep the mind in shape. Additionally, new working memory tests will be carried out. Most other studies have focused on such tests, but they have not previously been conducted as part of Betula.

“Undertaking longitudinal studies is extremely costly, so very few are carried out. But they have a considerable advantage in that they can track an individual’s development over time. This provides much more reliable results than comparing two groups in one monitoring exercise. We hope to gain evidence that the brain can be influenced, that things are never set in stone,” Jessica explains.

CARL JOHAN LILJEGREN

JESSICA KÖRNING LJUNGBERG is Senior Lecturer in Psychology at Umeå University and an Honorary Research Fellow at the School of Psychology at Cardiff University in the UK. Wallenberg Academy Fellows have awarded her a grant of SEK 5 million and Umeå University is matching this in co-financing. She will try to determine whether it is possible to exercise cognitive functions by way of multilingualism or a mentally demanding job. And if so, how long does the effect last? Can training “mental muscles” protect against dementia?
Climate research using teabags

Judith Sarneel, a researcher in the Department of Ecology and Environmental Science, enlisted the help of 250 school classes around Sweden to get a better idea of how soil breaks down plant matter. Together with colleagues in 30 countries, thousands of teabags containing black and green tea were planted in the ground to create a global map of the soil's decomposition ability. This autumn, all the teabags will be dug up again by the school classes and weighed to see how much has decomposed at the different sites. Using this data, Sarneel and her colleagues at Umeå University hope to make better climate change forecasts.

150,000

This is how much the population of Sweden is expected to grow each year over the next few years. According to Statistics Sweden, the country is projected to have a population of 12.9 million by 2060, with the elderly accounting for a far higher proportion than at present. “Coping with a rise in the number of elderly will require major changes to society’s resources,” Yngve Gustafson, Professor of Geriatric Medicine at Umeå University told TT. “The level of knowledge regarding the treatment of the elderly is currently extremely low,” he says.

What we do in front of a screen is more important than how long we spend there

Earlier this year, Umeå University’s Associate Professor in the Department of Applied Educational Science at Umeå University Elza Dunkels entered the debate on children and screen time. Her main adversary, the renowned paediatrician Hugo Lagercrantz, called for recommendations from the Swedish Media Council regarding the acceptable amount of time a child can spend in front of a screen in a day. By way of explanation, Dunkels stated: “The only good that has come out of counting screen time is to measure the hours in a day. What’s more, research shows that time isn’t a good indicator of the effect that screen use has on children. Studies have shown that what we do in front of a screen is more important than how long we spend in front of it.”
OUR HUMAN NEED for fantasy seems to increase in direct proportion to our exploding online activity. On the Internet, sources are sometimes dubious and fragmented leaving us hungry for genuine storytelling.

The age-old novel can lend a helping hand. A well-crafted story puts us in other people’s shoes. The key here is plot; a beginning, a middle and an end.

“As early as high school, teachers tend to focus on subject extracts, symbolism and style and lose track of the immersive experience of reading. Many students stumble with complex words failing to see the bigger picture. The risk is that many people never become readers,” says Anders Öhman.

This is why teachers should focus on complete works of prose, and not just fragments.

“What you actually read is not that important. The era of the classics may have passed us by—Stephen King is just as acceptable as August Strindberg—but the key is to read the whole book, to concentrate on the plot and to discuss it as a class.”

In his latest book, *The didactics, fiction and intrigue of literature*, Anders scrutinises the meaning and importance of being swept up by a book and disappearing into another world.

He has previously written about popular literature from the 1840s, which he believes is still relevant today.

“The novel played a key role in the evolution of modern society. The emergence of reading in the early 1800s allowed more voices to be heard, increased the opportunity to vicariously experience the life and conditions of others and paved the way for the democratisation of society.”

That’s why Anders is now interested in the impact of fragmented reading, not just in terms of an individual’s development—i.e. being unable to concentrate and see the whole picture—but on society as a whole.

CARL JOHAN LILJEGREN
IT WAS AL GORE’S 2007 film _An Inconvenient Truth_ that spearheaded the issue of climate change in the public’s consciousness. With the subsequent rise of global temperatures, strange events such as floods, droughts and melting polar ice caps have occurred.

Final preparations are currently underway for the December 2015 UN climate conference in Paris. Working guidelines will be drawn up to reduce emissions for the coming decades, following through on the Kyoto Protocol. All countries must do their bit. And everyone agrees that greenhouse gas emissions must be slowed, but the question is how?

In the long term, solar energy is an overarching solution. In just over one hour, the earth receives as much energy as its entire population uses in a whole year. It’s just a matter of harnessing it. The technology is surging ahead, while the price tag on new technology is falling.

There is, of course, no single solution to this monumental challenge that forges together political, economic and technological factors.

One piece of the puzzle can be found in northern Sweden, an area often overlooked in the global debate, and, more precisely, in our forests, which provide a raw material for generating electricity, heat and fuel, and which bind carbon dioxide throughout their existence. (Today, forests and other biofuels make up about one-third of Sweden’s energy supply, but only about one-tenth of the world’s.)

With the sun as its energy source, photosynthesis is a permanent motor powering tree...
growth. Much of the focus over the past decade has been on developing 2nd generation fuels, such as methanol, ethanol and biodiesel, from forest products to replace fossil fuels (although development has slowed somewhat lately due to low oil prices).

But the forestry sector could also be the future for a variety of other industries, including pharmaceuticals, clothing, real estate and food. Sometimes people speak of the emergence of a bio-based economy. “Forests are a fantastic source of raw materials, but it’s all about using them effectively. We used to make paper from wood pulp and then burn the rest for energy. But forests can be used for so much more,” says Stellan Marklund, Professor of Chemistry and Programme Manager of Bio4Energy, a collaboration between Umeå University, Luleå University of Technology, the Swedish University of Agricultural Sciences (SLU) and 20 or so industrial players.

The world-leading research within Bio4Energy spans the entire production chain—from the tree to the final product. One important part of their research is refining the trees’ genetics to ensure the most important qualities for each product.

To convert processed biomass into a finished product, researchers use one of two different techniques: either gasification and combustion, or a new biochemical conversion technique that makes use of microorganisms, among other things.

Today, the forestry sector—paper, pulp and sawn timber—is a gigantic industry in Sweden with an export value of over SEK 120 billion. But it’s a tough market and competition is fierce. For example, some countries can use eucalyptus trees, which grow 10 times faster than Swedish conifers.

“Our trees have long fibres that can be used in different ways. A tree is made up of cellulose, hemicellulose and lignin. It’s the cellulose that’s used to make paper, and the rest is typically burned to generate energy. But hemicellulose can be used in a variety of ways, such as in chemicals or packaging,” says Marklund.

A shift in the forestry industry has already begun. One example is Domsjö Fabriker. Their main product is now viscose for clothing, but their factory also produces lignosulphonates for the production of cement, ethanol and biogas. (Today the old Mo & Domsjö AB factory is owned by an Indian company, another sign of globalisation.)

“Domsjö is a major source of inspiration. Paper mills must move with the times and find new niches. I believe that in the future, all paper mills will be bio-refineries where we’ll capitalise on all the residual products.”

What will have changed by 2065?

“We’ll still be using the forests for fuel and to heat our homes, of course. But we’ll also have found many new uses, such as in pharmaceuticals. I also believe there’ll be more wooden houses, that they will become increasingly popular,” says Marklund.

“Forests will never be able to replace oil for all the world’s population. But if used correctly, they could go a long way towards doing so. What’s more, the forest is still an important recreational area—we must never lose sight of that.”

The health challenges posed by rising temperatures

Every year several hundred million people contract dengue fever, one of the world’s most widespread infectious diseases. The virus, which is spread by mosquitoes, usually only causes a fever, but in five per cent of cases it can have serious side effects. Between 12,000 and 25,000 people die every year as a result of dengue fever.

So far the virus has been confined to countries around the equator, but as the average global temperature increases, it will spread to more parts of the world.

How can we tackle this challenge?

This was the key question raised when researchers from around the world met at the White House for a workshop on dengue fever in September 2014.

“This is a climate-sensitive disease which will spread more and more as a result of increased globalisation. We discussed how to make the best possible forecasts and what countermeasures we can put in place,” says workshop participant Joacim Rocklív, Researcher at the Department of Public Health and Clinical Medicine at Umeå University.

Making long-term forecasts about diseases will become increasingly important as the earth’s climate changes. Where dengue fever is concerned, there is a lot to suggest that Europe will be affected; the Aedes albopictus mosquito is already established in large areas of Europe.

Researchers in Umeå have generated temperature scenarios that show how extreme weather conditions with large fluctuations in temperature increase the risk of dengue fever spreading to Europe.

“Countries with well-functioning health systems will generally cope with the climate threat quite well. But countries with a lower state of readiness will be more vulnerable,” says Rocklív.

It has long been clear that global changes in temperature affect society in a number of alarming ways—for example, through floods and extreme weather. But larger scale investigations of the impact on health only began in the early 2000s.

This is when Rocklív presented his first studies on the subject, which attracted a great deal of attention. They revealed that extreme heat in Sweden could increase the mortality rate by up to 20 per cent.

“This focused a lot of attention on the issue and laid the groundwork for the heat warning systems used by organisations such as the Swedish Meteorological and Hydrological Institute (SMHI). In my doctoral thesis, I went further and mapped which groups were most vulnerable, such as those with mental and chronic health problems, and those who are economically disadvantaged,” says Rocklív.

When the pieces of the puzzle regarding the impact of climate on disease started to come together, the next step was to consider what the long-term consequences would be. Rocklív was selected
IN PRE-INDUSTRIAL Sweden, the soil of Skåne could provide food for some 100,000 people. Thanks to modern agricultural practices, that same area when fully utilised can now feed 10 million people. A prerequisite for this has been plant improvement.

Science has laid the foundation for the development of agriculture and has created great potential for further improving plants by way of a new genetic technology known as GMOS (genetically modified organisms). This can involve creating crops that can resist pest attacks or that are drought tolerant.

GMOS are currently grown on a fifth of the world’s agricultural land, primarily in the Americas and Asia. Meanwhile in Europe, GM technology is heavily restricted because of a fear of negative impacts, such as on populations and ecosystems.

“Scepticism of new research before the risks have been studied is reasonable. But in the case of GMOS, the research community has spent several billions of kronor over the past 20 years studying the risks. Consequently, we know that the risk is no greater than other plant improvement technologies,” explains Stefan Jansson, Professor of Plant Cell and Molecular Biology at Umeå University.

“Everything we eat has undergone mutations that we humans have brought about or selected. But until now, this has been random. Thanks to advances in research, we now have control over how we improve plants.”

IN THE AUTUMN of 2014, Jansson along with 20 leading European researchers wrote An open letter to decision makers in Europe, which attracted the attention of the British newspaper, The Guardian, among others. The letter maintained that GMOS is an essential piece of the puzzle in the creation of sustainable agriculture.

“GMOS may not result in bigger crops. But we can reduce the use of chemical pesticides considerably, we needn’t irrigate as much and we can make annual plants perennial so as to reduce fossil-fuel consumption,” Jansson explains.

Foods can also be made more nutritious. One example is “Golden Rice”—rice that has been modified to produce vitamin A, which is deficient in the diets of many of the world’s poorest people.

GMOS may also prove to be useful in terms of future energy supplies, such as the planting of energy forests with a high fuel value.

AS A DOCTORAL candidate, Stefan Jansson was one of the first people in the world to study the gene sequences of trees. His research was based on studying how chlorophyll-forming proteins (which make plants green) actually work.

“A key finding of our research was that the genes of trees are very different. Two poplar trees standing side by side in a forest have completely different sets of genes, much like a human and a chimpanzee. So if you change a gene in a tree, the effect is usually marginal, and far smaller than the difference between two trees,” Jansson says.

Looking ahead to 2065, how do you think GMOS will be used?

“They’ll be used worldwide, for sure. The research is unequivocal—the technology is safe, sound and effective. And what’s more, it’s needed if we’re to address future societal challenges. Impoverished countries in Africa will use the technology to produce the crops they need.”
“I believe that cooperation throughout Europe will lead to all forms of joint taxation being abolished on men and women in joint families, so that European women will have the chance to be economically independent.”

Asa Gunnarsson, Professor of Fiscal Law

The consequences of an ageing population will make themselves known with time. A smaller number of people at work will mean we have to support a larger number of people. How should our welfare model look and how will we bring in taxes in a sustainable way? How can we meet these challenges before six years from now? How will the situation look in 2065? The role of the family will also change. Family networks will thin out and the gap between generations will widen. "Family members will have to take greater responsibility if public institutions don’t have the resources. There’s a great risk that this will lead to increased social divisions, as family networks are unevenly distributed," Malmberg says.

The trend towards an ageing population is also spreading globally in line with the declining birth rate. The populations of many countries have already started to decline, and the global population could start doing so by the end of the century.

"Without immigration, the Swedish population would already be in decline. "In the long term it’s quite important for us to have immigration in Sweden so that the population doesn’t decline. A declining population makes it harder to maintain services and infrastructure.”

Today, immigration levels are relatively high in Sweden, but Malmberg believes that migration flows could change in the long-term.

"A lot of people want to come to Europe today. But in the future, places such as China could have greater workforce needs, so perhaps the streams of refugees will move there instead." How can we meet these challenges before 2065? “We must safeguard our welfare institutions. We also need a more sustainable working life. It might be that we need to study intermittently throughout our lives to keep our skills up to date. Our current vision of our lifespan may change – we can probably expect a more drawn out and less standardised progression through life in the future.”

The ageing population
When Sweden introduced its state pension in 1913, the average life expectancy was about 55. And the retirement age was 67. Today, the retirement age is 65, but on average we live to be over 80.

And if the long-term trend continues, life expectancy will continue to increase by three months a year.

"By extension, after 50 years the average life expectancy will be over 90. The renowned American population researcher James Vaupel believes that more than half of all Swedish children born today will live to be well over 100 if the current trend continues," says Gunnar Malmberg, Professor of Human Geography.

We can’t say with any certainty how big future populations will actually be, but demographic processes nevertheless have long-term consequences. What happens today has an impact extending far into the future.

"We’ll have an ageing population in Sweden and Europe. That’s because we’re living longer and we have a declining birth rate. In Sweden, the percentage of over-65s is expected to increase from around 20 per cent today to 25 per cent by 2065,” Malmberg says.

The consequences of an ageing population will make themselves known with time. A smaller number of people at work will need to support a larger number of people.

"In the long term, we’ll have to work longer to balance the equation. But circumstances will vary. Some people will become worn out – many of those with lower incomes won’t be able to work any more, whereas the more affluent will at least be able to afford private pensions,” says Malmberg.

The role of the family will also change. Family networks will thin out and the gap between generations will widen. "Family members will have to take greater responsibility if public institutions don’t have the resources. There’s a great risk that this will lead to increased social divisions, as family networks are unevenly distributed," Malmberg says.

The trend towards an ageing population is also spreading globally in line with the declining birth rate. The populations of many countries have already started to decline, and the global population could start doing so by the end of the century.

"Without immigration, the Swedish population would already be in decline. "In the long term it’s quite important for us to have immigration in Sweden so that the population doesn’t decline. A declining population makes it harder to maintain services and infrastructure.”

Today, immigration levels are relatively high in Sweden, but Malmberg believes that migration flows could change in the long-term.

"A lot of people want to come to Europe today. But in the future, places such as China could have greater workforce needs, so perhaps the streams of refugees will move there instead.” How can we meet these challenges before 2065? “We must safeguard our welfare institutions. We also need a more sustainable working life. It might be that we need to study intermittently throughout our lives to keep our skills up to date. Our current vision of our lifespan may change – we can probably expect a more drawn out and less standardised progression through life in the future.”

The welfare state – and the shrinking tax base
With an ageing population, a smaller number of people will have to support a larger number of people. How should our welfare model look and how will we bring in taxes in a global world with fast-moving capital?

It’s a challenge facing Sweden – and all of Europe. Historically, nation states have gained their strength through robust taxation systems.

"In a world of global trade, where goods, services and capital change hands quickly, developing sustainable taxation systems to finance welfare is a major challenge. The situation is made no less complicated by the fact that the economic crisis in many European economies has yet to stabilise,” says Åsa Gunnarsson, Professor of Fiscal Law.

Creating a sustainable taxation system is a complicated task. Easy solutions like taxing only stable and immobile tax bases such as food, property and a country’s poorer populace, or implementing a fixed tax rate per citizen, would be manifestly unjust, Gunnarsson believes.

"The robust taxation system that Sweden built has been partially eroded by a patchwork quilt of rules that have successively led to an ever lower tax rate.”

Between 1965 and 1990, the tax burden in Sweden was increased from 33 to 49 per cent. That was a general trend through-
Imagine a translucent and weightless material stronger than steel where electrons travel a thousand times faster than in silicon. Over the last decade, global expectations for the ‘super’ substance graphene have run high. Graphene, a thin layer of carbon atoms bonded together in a flat network, could be used in everything from superfast computers to hypersensitive detectors.

“Graphene could change the world. But you can’t take anything for granted. There are many smart materials that we have had high expectations of—fullerene, for example, the discovery of which won the 1996 Nobel Prize. But its potential is clearly enormous,” says Alexandr Talyzin, Associate Professor in the Department of Physics at Umeå University.

He is part of Graphene Flagship, a major international research network based at Chalmers University in Gothenburg. The project—the largest ever in the EU—has been awarded around SEK 9 billion over 10 years to find new applications that could eventually revolutionise a number of industries in Europe.

With his colleagues at Umeå University, Talyzin is investigating a variety of options for using graphene to store hydrogen gas in a more efficient, compressed way.

“The use of hydrogen gas in the field of energy will be increasingly important in the future—for instance, in the fuel cells of cars, as well as in large solar energy installations. If, for example, you were to build solar power plants in the Sahara, you could then convert solar energy into hydrogen gas and transport it to Europe via pipelines. There would be considerably less transmission loss than there is with electricity,” he says.

In an energy context, graphene could also be an important component in more energy-efficient batteries or super-capacitors in electric cars, for example.

The possibility of fast computers and new flexible electronics—such as bendable phones—has gained the most attention in public debate.

“Another important property of graphene is its absorbency, as it has such a large surface area. It can be used to filter water impurities, or to make fresh water from salt water. This product could be huge,” says Talyzin.

Potential future applications are huge. As it stands, we don’t yet have the technology to produce graphene efficiently on an industrial scale.

What’s needed to make that breakthrough?

“We need a killer application on the market that will drive demand. Then prices will start to drop. But just what area this will happen in is hard to predict,” Talyzin admits.

*Fullerene is a hollow structure of carbon atoms, usually globular or tubular in shape. Like graphene, it is light and very strong.
out Europe, although Sweden had a higher tax burden than most countries. Since then, the tax burden has fallen back to just over 40 per cent.

“The neoliberal economic policies that have informed the framework of taxation systems in all the OECD countries since the 1980s and in Sweden since 1991 have led to greater income inequalities. This taxation ideology promotes low, non-progressive taxes on labour, even lower taxes on capital and companies, and reduced—or non-existent—taxes on wealth. VAT, however, can be increased. It’s all about adjusting taxes based on market conditions to increase growth. But this is a tax policy that undermines the financing of both welfare and equality,” claims Gunnarsson.

“All the research we have conducted to date in our international network, Feminist Studies on Taxation and Budgeting (FemTax), indicates that around the world these neoliberal tax reforms have reinforced economic inequalities.”

Since March 2015, Gunnarsson has been co-ordinating an EU project within the Horizon 2020 programme that aims to overcome future challenges in the area of taxation. The project, Revisioning the Fiscal EU: Fair, Sustainable, and Coordinated Tax and Social Policies (FairTax), comprises a multidisciplinary group of researchers from 11 universities.

The EU currently has no powers to control the taxes of member states beyond certain indirect taxes relating to environmental issues and border control. But in the long run, perhaps some taxation powers will be transferred from member states. This is where FairTax can guide the way.

“We’ll look to develop strategies and recommendations on how to build sustainable, efficient and fair taxation systems in Europe. How taxes will be paid, what they will be used for and, not least, how they will be managed are critical issues for the whole EU integration process. It is my belief that if politicians don’t dare to tackle these issues, they could lead to major social conflict.”

What will have changed by 2065?

“[I] believe that cooperation throughout Europe will lead to all forms of joint taxation being abolished on men and women in joint families, so that European women will have the chance to be economically independent.”

Man and machine

IN AN INTERVIEW IN 1964, science fiction writer Arthur C. Clark said that in 50 years’ time, “we could have brain surgeons in Edinburgh operating on patients in Tahiti”. To him, the advent of wireless communication was a given.

Digitalisation was still in its infancy then: there were already several thousand computers in the workplace – but hardly any in the home. At about the same time, the US military started developing the forerunner to the Internet, ARPANET.

It took 30 years before the breakthrough came, but digitalisation is now transforming the world from the ground up. Over three billion people worldwide have Internet access, whereas soon five billion will have a mobile phone. (Incidentally, a new iPhone has more computing power than the Apollo 11 space shuttle that went to the moon in 1969.)

Digitalisation has had a profound effect on business models and has shaken up every industry in some way.

Fifty years ago, automation was going to put everyone out of a job. Now it’s time for new predictions, some equally threatening. “Historically, these thoughts have often surfaced, but I am sceptical. More than anything, this development leads to new professional fields emerging. And machines and robots are still hopeless at many things,” says Pelle Snickars, Professor of Media and Communication Studies with a specialisation in digital humanities.

The IT industry itself is a good example of one of these new industries: in 1970 there were only a few IT companies in Sweden, but over 40 years later the industry now employs around 190,000 people and has a turnover of SEK 378 billion. But recent years have seen the emergence of completely new professions, following in the footsteps of digitalisation. For example, when Swedish business magazine Veckans Affärer listed the 10 hottest job titles in 2015, Data Artist and Expectation Analyst occupied some of the top spots.

Another challenge that some scientists – including Stephen Hawking – discuss is the risk of computers essentially taking over the world, of artificial intelligence (AI) becoming greater than human intelligence combined, and potentially spelling the end of humanity.

“There have been different takes on AI throughout the history of digitalisation. On one hand there are those who argue that humans are building artificial intelligence. On the other hand, there are those who emphasise the intelligence that is born in the interaction between man and machine. That’s the side that most interesting computing visionaries are on,” says Snickars.

Snickars embraces technological development in its entirety (“we need more technology, not less”) and believes, for example, that technology will play a greater role in schooling. He also believes that we should be able to see significantly faster and closer contact with authorities through digital channels.

“I’m not particularly scared, either, of the surveillance society that many see as a consequence of the Internet’s growth. Everything being localised is an inevitable part of the technological interaction, but it doesn’t happen on a personal level. It treats us more as numbers than individuals. However, by that same token people should perhaps cut back on their IT usage. When personal data is the currency that social media giants cash in on, perhaps people should not be sharing their data so freely.”

What will have changed by 2065?

“Technological development probably won’t be diminished in any case, nor will there be any backlash. The Internet will still exist, like a kind of road network, and will be accessible everywhere. The difference between being on and offline will disappear. But the question is whether it’s the web that will be the normal means of communication, or whether something else will come along. Few media forms last forever. Most things change and mutate.”

Bacteria attack

IT WAS AN UNWASHED bacterial culture that led to one of the most important discoveries of the century. When Alexander Fleming came back from his holiday in 1928 to find mould

“ The Internet will still exist, like a kind of road network, and will be accessible everywhere. The difference between being on and offline will disappear.”

PELLE SNICKARS, PROFESSOR OF MEDIA AND COMMUNICATION STUDIES
UN ESTIMATES SUGGEST that in excess of two billion more people will be living in urban areas over the next few decades. Although urbanisation is strongest in Asia, it is actually a worldwide trend, Sweden included.

Rapid urban development combined with major social and environmental challenges such as increased CO2 emissions, poor air quality and water scarcity put urban planners and architects under considerable pressure.

“The role of future architects will be very different. Traditionally we have seen ourselves as builders, but we need to embrace the current challenges to society and become more flexible in our role,” explains Ana Betancour, department head at the Umeå School of Architecture since early 2009. Previously, she was Professor of Urban Design at the Chalmers University of Technology’s School of Architecture.

Her diverse educational and research background spanning Sweden, Spain and the UK gives her a broad cultural and knowledge-based profile. This will probably come in handy in her role as department head of the Umeå School of Architecture, whose international profile has become evident since it was established in 2009.

“We’ll continue to be an international school with strong networks and worldwide collaborations. I also want to strengthen and anchor the school locally and nationally,” Betancour explains.

One of Betancour’s passions is sustainability. As early as the late 90s, she established one of the first sustainability programmes in Swedish architecture at the KTH Royal Institute of Technology in Stockholm.

Since then, sustainability has grown in im-
portance and is likely to continue to do so going forward. Betancour thinks we ought to broaden the concept of sustainability.

“Often, we focus exclusively on the physical environment, as in the case of energy efficiency technologies. We now have to address more of the social and cultural dimensions of sustainability,” Betancour explains.

Who are we building for, and which groups are represented? How should we organise and distribute resources in society? There are a lot of major issues that architects and planners have to take into consideration, according to Betancour.

This conceptual shift means that architects must take greater responsibility for future urban environments.

“Earth’s resources are not infinite. We currently have a global economic crisis and many social problems and political tensions in cities that are crying out for completely new ways of thinking and working. Architects can play an important role in urban development and, in so doing, contribute to social development. “Climate change places huge demands on where, what and how we build. These are all new issues and areas of knowledge that architects have to address now and in the future.”

Consequently, future architects face not only a more complex world to work with, but also development that presents them with new opportunities, according to Betancour.

How does the situation in 2065 look?

“It’s hard to say. I hope we’ll see more cities organised around neighbourhoods, with local production, autonomous decision-making and self-sufficiency, with alternative systems for energy consumption and infrastructure, and different economic models for distributing resources and assets among the city’s inhabitants.

“One thing is certain – we can’t continue building as we do today. It’s too resource and energy intensive. We need to sit down and think again, and to challenge our preconceptions of the city.”

Architects must take a greater responsibility for future urban environments, says Ana Betancour, Umeå School of Architecture.
“If the conflict-generating factors remain, i.e. political and economic factors, the conflicts will continue. To counter this, we must combat poverty and reduce social injustice, among other things. It’s all too easy to blame religion.”

Tomas Lindgren, Associate Professor in Psychology of Religion

Growing in his bacterial culture, he realized he was onto something important.

Thirteen years later, penicillin was ready to be used on humans and in 1945 Fleming travelled to Stockholm to accept the Nobel Prize. But even then Fleming sounded a warning about the threat of resistance; namely that bacteria develop a resistance to antibiotics the more they are used.

And now, 70 years on, the risk is acute. Certain scientists believe that at least half a million people a year die due to antibiotic resistance — in Europe alone that figure is 25,000. In 2015, the World Health Organization (WHO) adopted a global action plan against antibiotic resistance.

At Umeå University, several ongoing research projects aim to find ways to combat antibiotic resistance. For example, developing molecules that block attacking bacteria, or finding new genetically engineered tools that mimic the bacteria’s own immune defences (this is where Emmanuelle Charpentier developed her own pioneering new methods — see next page).

Developing new antibiotics requires knowledge at a molecular level. One of those in pursuit of new tools to combat infections is Christian Hedberg. But he focuses on looking at what happens chemically in the cells when bacteria and parasites attack.

“It’s a pretty open field of research. Molecular biologists usually investigate what happens in bacteria on a genetic level, not inside the host cell itself. But how an infection works chemically at a cellular level — that we know very little about,” he says.

His primary research subjects are intracellular bacteria, such as Legionella pneumophila, which causes Legionnaires’ disease. The bacteria invade the cells of the immune system and release a number of different proteins that kidnap the cell’s functions so that they can then multiply in peace and quiet.

Hedberg and his colleagues are trying to find similarities in the different ways bacteria kidnap and modify host cells.

“The same mechanism in Legionella pneumophila is found in other bacteria. It’s important to understand what happens and put the mechanical puzzle together. This can give us a greater understanding of which antibiotics we might need in the future. After all, a number of the antibiotics we have today were found by complete chance. Some do the job, but we don’t really know how they work.”

He is concerned about the rapid development of antibiotic resistance.

“We need more discipline in how we use antibiotics around the world. Today, hundreds of thousands of tonnes of antibiotics are used in animal feed, which can spread to the surrounding environment. And we need better incentives for companies to invest in solving this problem. Antibiotics need to cost more. Today’s margins are too low.”

The growing role of religion

On 24 October 1648, the Peace of Westphalia was signed in Münster. It brought an end to the Thirty Years’ War, which some sources estimate caused the death of seven million people.

At its core, the conflict pitted Protestants against Catholics, although of course many conflicting power interests were also entangled in the war. After the Peace of Westphalia a new term was coined: secularisation, and — on paper — religion became more of a private concern.

But some 370 years later, as a result of conflicts in the Middle East, religious conflicts are becoming more of a hot topic than they have been in many years. In Syria and Iraq, the new Islamic State (IS) caliphate is growing, spreading over an increasingly large geographical area — and with extremely brutal methods.

But just as before, religion isn’t the only factor at play — the situation is considerably more complex, according to Tomas Lindgren, Associate Professor in Psychology of Religion.

“It also involves structural factors, political marginalisation, social and economic injustice, corruption and unemployment. But using religion in a conflict situation can have its advantages, as it makes it easier to mobilise others. Religion makes recruitment easier and strengthens cohesion.”

In his research, Lindgren has analysed a series of conflicts in Indonesia, looking at how religion has been used to mobilise people in places like Sumatra and Timor.

Over the past 30 years, religion’s role in the world has grown. This is due to several different factors, including population growth trends and the failure of a number of secular political systems. Religious movements have recently shown the strongest growth in Africa, Asia and Latin America. Studies have also shown that the proportion of religiously motivated civil wars has increased over the last 30 years.

“It’s a natural consequence of the bigger role played by religion in our world. Roughly half of all civil wars going on today have a religious component.”

As with demographics, it is quite easy to see what the development of religion will look like in the long term. In the years leading up to 2050, the number of those who consider themselves religious will grow gradually, with the number of Muslims growing the most — from 1.6 to 2.8 billion people — plateaueing just under that of Christians, who will by then number 2.9 billion people. The number of atheists will also increase, but this group will shrink proportionally to 13 per cent (1.2 billion).

But will there be a greater level of religious conflict before 2065 — will the numbers continue to increase?

“If the conflict-generating factors remain, i.e. political and economic factors, the conflicts will continue. To counter this, we must combat poverty and reduce social injustice, among other things. It’s all too easy to blame religion.”

At the same time, Lindgren brings out a parallel, slightly brighter vision of the future:

“A lot of social and political change in recent decades has occurred through non-violent resistance — for example, in the Philippines, Eastern Europe and North Africa.” Research into this area is sparse at the moment, but Lindgren is currently working on an empirical study on non-violent struggles in Indonesia, including in Papua and Timor Leste, where the church has also played a central role.

“I actually think non-violent strategies will become more common in the future,” he concludes.
She has received a host of awards from research foundations and features on lists of the world’s most influential people. Umeå researcher Emmanuelle Charpentier’s discoveries are revolutionising genetic engineering. Possible results of her work include new treatments for a range of serious diseases.
I am honoured and touched to receive these prestigious awards. This is tremendous recognition for me and my team, and also for fundamental research in microbiology, genetics and biochemistry.
and archaeal (another kind of single-celled organism) genetics. These tiny DNA snippets have been known since the 1980s, but for a long time scientists thought that they were a form of “junk DNA” — i.e. DNA without information. Over the past decade, however, that view has been revised.

During 2005, some scientists suspected that CRISPR was part of bacteria’s defence against external attack, and in 2007 it became clear that it actually is an adaptive immune system in bacteria: in other words, a defence with the ability to remember an invading virus and thus be better equipped against future attacks. The notion that bacteria could have adaptive immune systems was previously unknown. For Charpentier, the new findings were of huge interest.

“The goal of my lab’s research is to understand an infection process from the bacteria’s perspective: how they survive, adapt, protect themselves, multiply and cause disease,” she says. “CRISPR relates to how bacteria defend themselves against invaders such as viruses by targeting the invader’s genome. Thus CRISPR influences the bacteria’s ability to cause diseases or become resistant to infections.”

IN EARLY 2009, Charpentier began her new job as a group leader at MIMS at Umeå University. In the years that followed, in collaboration with groups in other parts of the world, her research team discovered more and more details about CRISPR and other molecular components involved in the process. Together, these substances form a complex entity that finds and disables virus DNA by simply cutting it apart. The scissors are the Cas9 protein, and the small address label that ensures that the cut happens in the right place is made up of RNA. Bacteria can change this RNA as needed—thus adapting their immune systems to scout for new viruses.

It quickly became clear to Charpentier that the CRISPR-Cas9 system was beginning to look like a potential tool for gene modification. By replacing the small RNA address label, you should be able to get the scissors to cut exactly where you want, virtually anywhere in the DNA.

“We realised that it ought to work and that, if it did, it could be a very simple and flexible tool,” says Charpentier. “You only need to design a new RNA sequence of the tool – a relatively simple matter.”

Charpentier's research group published an article in the journal Science in August 2012, describing the targeting and cleavage of DNA by CRISPR-Cas9. Since then, things have taken off. In rapid succession, this new tool has been applied across a variety of research areas and practical contexts. For example, not only can CRISPR cut DNA, it can also be applied to replace one gene sequence with another.

“I had no doubt that it would work and had even predicted earlier on that the system could be harnessed to treat human genetic disorders. I have always performed my research at a basic level but always keeping a perspective toward a possible exploitation of my findings for potential benefit to human therapeutics. The Swiss-based company CRISPR Therapeutics, which I co-founded together with Shaun Foy and Rodger Novak, now focuses on this area. Suddenly, everyone wanted to get involved in testing and applying the new tool. The new technology was quickly adopted and readily applied by the scientific community, confirming that CRISPR-Cas9 is useful in multiple cell types, including human cells,” says Charpentier.

Following the 2012 publication in Science, interest among genetic
CRISPR-Cas9

Emmanuelle Charpentier and her team discovered the CRISPR-Cas9 mechanism that withstands virus attacks in bacterial immune systems. CRISPR-Cas9 consists of:

1. CRISPR DNA sequences (CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats) are specific for each virus and encode unique RNA sequences. This sequence is the memory of virus DNA. One RNA molecule (the green handle) is called CRISPR RNA. It contains the memorised viral sequence used to recognise a new virus attack.
2. Together with a second small RNA, tracrRNA (trans activating crRNA) (handle in red), the pair of RNAs guide the Cas9 enzyme (both scissor blades) to the corresponding DNA sequence.
3. CRISPR-Cas9 (complete scissors) recognises the viral DNA during a new virus attack and cleaves and neutralises the intruding DNA to prevent a new infection.


The CRISPR-Cas9 system (scissors) has been used for the genetic modification of cells in virtually all types of living organisms. The system recognises a precise sequence to be deleted or replaced with an alternative DNA sequence. Harmful genes can be silenced or replaced and individual mutations can be corrected.

CRISPR-Cas9 is like a Swiss army knife for genetic engineering — it has been used in all types of living cells, and it can be programmed to accurately cut and paste exactly where scientists want in the genome. It is as though genetic engineering has been given a counterpart to the computer function of “Find & Replace.” CRISPR-Cas9 has already become important in a series of different research areas, but it is its potential in medicine that has attracted the most attention.

“With CRISPR-Cas9, gene therapies may be developed for a large number of diseases with genetic causes for which there is currently no treatment or where treatment could be much more effective,” says Charpentier. Examples include haemophilia, sickle-cell disease, Pompe disease, Huntington’s disease and cystic fibrosis.

CRISPR-Cas9 may also enable the development of new treatments for cancer and severe infectious diseases. For example, the tool is already being used in HIV and malaria research.

But research takes time. Despite the tremendous response in the research community, it will be some time before the new tool can be used in human medical treatment. Researchers must ensure there are no significant “off-target effects;” in other words, cases where CRISPR navigates incorrectly in the cell and manipulates the wrong genes.

One potential route for treatment might be to take a cell sample from the patient and correct the pathogenic gene in a cell culture in the lab. The cured cells can then be grafted back into...
The understanding will probably help to develop alternative treatment methods for infectious diseases and prevent antibiotic resistance in certain areas.

In addition to new medical treatments, the new technology is expected to be of great importance for the food industry. Another use is animal research for testing purposes.

“Today we often use so-called transgenic animal models; in other words, animals that have certain genetic changes,” says Charpentier. “But making these changes is often a time-consuming process. When I was a postdoctoral researcher in New York, I came into contact with animal research and created transgenic mouse models. I was amazed to see how much time scientists had to devote to implement the genetic changes, and how little time they got, in the end, to study their animal model and draw their conclusions. With CRISPR, that changes. Scientists who are working at the cutting edge are already up-and-running and using it.”

“CRISPR-Cas9 is on its way to transforming the biotechnology and medical landscapes. The technology is very versatile and multiple versions of CRISPR-Cas9 have now been developed to target genomes and their expression in various ways. There is still a lot of work to be done but the technology has great potential for translation into gene medicines for the treatment of certain human genetic disorders. However, we will have to wait a couple of years before the first products are progressing in early clinical trials. Other future directions include the development of CRISPR-Cas9 technology for the treatment of other types of human disease such as cancer and infectious diseases.”

The research at MIMS focuses on molecular infection mechanisms in various pathogenic microorganisms. The understanding generated is also expected to result in the development of alternative antimicrobial strategies. In addition, the understanding of CRISPR-Cas9 obtained by Charpentier’s research group will probably help to develop alternative treatment methods for infectious diseases and prevent antibiotic resistance in certain areas.

“Infectious diseases remain the second most common cause of mortality worldwide and there are serious concerns about the increasing problem of antibiotic resistance. Therefore, we need to better understand how bacteria function and evolve. CRISPR-Cas9 can benefit our understanding of the cellular and molecular mechanisms underlying bacterial, viral and other types of infectious disease, and point towards new pathways for the development of novel antimicrobial therapies. Investigations are ongoing to evaluate the possibility that CRISPR-Cas9 could be harnessed to treat infectious diseases.”

A powerful new tool in gene engineering also raises ethical questions and concerns. How can we ensure that gene manipulation isn’t used in a way that harms humanity? In April, Chinese scientists reported that they had edited the genetic make-up of human embryos using CRISPR-Cas9. The trials were carried out on defective single-cell embryos from an IVF clinic, which could never have become babies, but the news has reignited the debate about regulating genetic engineering.

Charpentier thinks it is good that ethical issues are receiving so much attention. At the same time, she points out that there have long been established principles to comply with, because it has been possible for four decades to modify DNA using genetic engineering. These rules are just as relevant to CRISPR-Cas9 as they have been to all the previous genetic engineering tools. One of the underlying principles has been that the human genome should not be edited in germline cells, so that changes introduced to treat an individual patient, for example, would not be passed on to future generations.

“Therapeutics should be developed according to very high safety standards and are most important in situations where there are no similarly effective or readily available treatment options. Scientists, clinicians, patients and the industry as a whole, as well as experts on ethical and related legal questions, need to have an open dialogue on the risks and benefits of precise gene-editing technologies in germline modification.”

Today, Charpentier divides her time between Umeå and Hannover/Braunschweig, Germany, where she has been a professor since 2013. She has been awarded an Alexander von Humboldt Professorship, one of Germany’s most prestigious research prizes, which enables excellent conditions for research. In 2015, she accepted a position as a Director at the Max Planck Institute for Infection Biology in Berlin.

“But I will continue as a visiting professor with my research team at Umeå, with which my group in Braunschweig has very close contact by way of video-conferencing. It’s much appreciated – the young researchers think it’s fun and slightly exotic to work with colleagues far away. And of course, I see the benefit in that they receive this training – research today is very much about collaborating in international networks.”

Unlike many other colleagues, Charpentier has been keen not only to change her environment but also occasionally to change her research track during her career.

“Changing your subject is certainly risky but also very instructive, just as it’s stimulating and challenging to move between countries and research environments. It has been important to me. It stimulates you to reflect, question and find the right approach to new questions, and you often think more freely when you come from the outside. You also get the chance to work with new colleagues.”

“For this reason it has been an amazing experience to be involved in and to establish a new research field,” she explains.

“CRISPR has brought together talented researchers from various fields – bacteriology, molecular biology, genetic engineering, etc. – and together we are challenged to think in completely new ways and explore the unknown from scratch. It’s incredibly exciting to work in such a vital field, where there isn’t yet any dogma, and where one really has to be creative.”

But she also sees the CRISPR fever as something of a revenge for microbiology, which, in the shadow of high-prestige areas of biology such as cancer research and neurology, tends to be a little neglected.

“Microbiology is often seen as a rather old field in which most aspects have been researched and the field has now been exhausted. In fact, this is where there is the most work left to do. Infectious diseases remain the second most common cause of mortality worldwide and there are serious concerns about the growing problem of antibiotic resistance. Therefore, we need a better understanding of how bacteria function and evolve. As a tool to treat human genetic diseases, CRISPR has bridged boundaries between different areas of biology and shown once again how important discoveries in microbiology can be!”
The future and freedom

“THis is where I believe the greatest advances will take place from a social perspective – in our view and communication of knowledge.”

 HOW WILL THE WORLD BE IN 50 YEARS? In this issue of Think we interviewed 10 top scientists from Umeå University. They describe, in relatively broad strokes, how the world might look in 2065. As scientists, they are professionally trained not to make unsubstantiated conclusions – who can really predict what the future holds? Can there be empirical proof? Despite cautious turns of phrase, a slightly dystopian vision of the future emerges.

One credo has guided me in life: “Everyone is an optimist because a pessimist wins whenever he loses.” The sheer will to survive is simply the option that creates the most harmony in the human soul.

Is this true? Our ability to unflinchingly process complex processes, difficulties and problems – is it this that takes us forward, that sharpens our minds?

Being a scientist means that you are constantly inquisitive and prepared to reconsider your theses and hypotheses – a never-ending verification process. The so-called “third task” – publishing your research for a wider public – is something that scientists shy away from. A cautious formulation often gets set in stone by a headline-hungry media, often misrepresented and grossly simplified.

This is where I believe the greatest advances will take place from a social perspective – in our view and communication of knowledge. With the Internet, more and more people have learned to critique their sources: where does the information come from?

THANKS TO DIGITALISATION, enormous quantities of facts, information, lessons and experiences have become available to a large part of the population. The magnitude of the data circulating in our digital reality is inconceivably vast. A modern mobile phone can store more books in its memory than can be fitted on the shelves of the standard school library. A lifetime isn’t enough to read them all. This has led to an unprecedented opportunity for each and every one of us to be informed, but it has also led to the increased risk of being equally misinformed. But literacy is increasing fast. There are more mobile phones on our planet than people; 7.9 billion, according to IT consultancy Cisco.

It is crucial in such a situation to be able to hold debates here and now, twist and turn the facts, view them from different perspectives and dare to be critical. This is why the concept of freedom will be absolutely central to future society. The freedom to think and express oneself about just about anything is the primary characteristic of an open society and this is where universities play a key role. This is the role that Umeå University has played in my life.

WHEN I BEGAN studying history in the cabins behind the hospital in the autumn of 1969, Umeå University was the newest and smallest university in Sweden. The library was rudimentary and students were only a few years younger than the tutors, so we often had to teach ourselves. There was a pioneering spirit in every corridor. When Umeå University celebrates its centenary in 2065, I hope it will not be a university burdened by historical heritage and a fear of innovation and thinking big. As I walk down the corridors today I am struck by how much of the pioneering spirit lives on – the exhilaration, playfulness, candour and non-dogmatic thinking – while the important roles of tutors, mentors and professors now attract the very best people in their respective fields.

Umeå University in 2065: the students come from the four corners of the earth, most of the courses are taught in English, and why not Chinese and Swahili too? The place is the foundation of it all, where individuals energise each other and interact. It’s anything but a quiet backwater; rather it’s a hive of activity. And the sheer range of thoughts and ideas are changing the world. A broad access to facts and knowledge is the single strongest prerequisite for a good life for many people 50 years from now. ○

Bi Puranen is Associate Professor of Economic History and affiliated with the Institute for Futures Studies. Her main areas of research are security and values from a comparative perspective. Previous projects at the Institute for Futures Studies have focused on Life & Health, on women’s conditions and the epidemiology of tuberculosis in particular. Bi Puranen is Secretary General of the World Values Survey.”
Social conditions and a lack of freedom of expression are recurring themes in the exhibition *Mien Meo Mieng/Contemporary Art from Vietnam*. Nguyen Tran Nam’s five life-sized fibreglass figures entitled *We never fell* (2015) portray man’s endurance and ability to resist. The work tells the story of the artist and his family and their attempts to adapt to urban life after moving from the countryside. Exhibit closes 1 November 2015.

Poetic and seemingly humorous works of art conceal complex and dark messages. This autumn, Bildmuseet presents the most comprehensive exhibition of Vietnamese contemporary art seen in Sweden, *Mien Meo Mieng/Contemporary Art from Vietnam*. 
“Roll your tongue seven times before speaking.” This Vietnamese saying pervades *Mien Meo Mieng*. Each work of art and each statement about the world contains a series of underlying layers. For Vietnamese artists, this attitude is necessary for navigating the country’s strict censorship.
In the video installation *Unsubtitled* (2014), Nguyen Trinh Thi projects films by 19 artist colleagues presenting sawn-out silhouette figures as they stand and eat. “Eating needs no explanation,” she says. Yet she still allows each participating individual to report what they have just eaten. The work becomes a metaphor for resistance against surveillance, censorship and limited artistic freedom.

Tran Tuan’s 2.5 metre tall sculpture *Forefinger* (2015), made of materials such as copper plating, shells, cowhide and water buffalo horns, draws our attention to victims of war and its unresolved trauma. Opponents of the war cut off their forefingers so that they would not be able to hold weapons. Many of Tran Tuan’s elderly relatives are missing their right forefinger.

The piece *Sanctified Clouds* (2015) by Nguyen Phuong Linh shows images of the bomb blasts, smoke and explosions of war, which the artist has collated from the Internet and transferred to 140 pieces of handmade porcelain. The blue-tinted images are seductive while simultaneously representing deadly power.

**Bildmuseet**

In the three decades since Umeå University founded Bildmuseet, the institution has evolved into one of the country’s most interesting platforms for international contemporary art. In 2014, the museum was one of the leading candidates for the Council of Europe’s Museum Prize, as well as for the Swedish Museum of the Year Award. Since 2012, Bildmuseet has been housed in the new and acclaimed museum building at the Arts Campus on the banks of the Ume River.
Mien Meo Mieng covers topics such as the aftermath of war, freedom of expression, migration and the vulnerability of Vietnamese society. The exhibition includes sculptures, video installations, paintings, drawings and other art installations by 14 artists. The curator is Tran Luong from Hanoi, who selected local artists, most of whom were born in the 1980s.

Tran Thi Kim Ngoc is a composer, musician and artist who has combined these forms of art with theatrical elements in the video installation Con OEE (2015), a work based on a political poem from the 1950s by the poet Tran Dan.

Expressing an opinion in Vietnam requires caution and consideration. Seemingly innocent and humorous observations can conceal a serious and critical message. Rolling your tongue seven times before speaking is certainly one way of coping with life.

Sometimes things move slowly in a Communist society. Nguyen Manh Hung’s painting Tax (2014) reflects social events with humour and—for those who can interpret the symbolism—a great deal of satire.
Vietnam’s road to recovery following the end of the war in 1975 has been long and arduous. Although the economy has grown in recent years, Vietnam is a country where freedom of expression is highly restricted and where there is little respect for human rights. This makes for a tricky situation for the country’s artists.

A 50-centimetre-tall statue of a boy reminiscent of a Buddha may seem nice. But the boy is giving his audience the finger. He wants to distance himself from the lies and rotten morality of society. Vu Hong Ninh’s Little Soap Boy is, as the name suggests, made from soap.

Bang Nhat Linh’s The Vacant Chair (2015) tells of unhealed wounds and the continuing suffering 40 years after the end of the Vietnam war, as well as of the dynamics between the war’s “winners” on the North Vietnamese side, and its “losers” – the South Vietnamese.
Nothing is black or white

Lena Berggren, teacher and senior lecturer in history at Umeå University, is one of Sweden’s most knowledgeable experts on fascism and anti-Semitism. The driving force behind her research is trying to understand the dark forces that many view as inexplicable.

BY: DAVID GROSSMAN
PHOTO: ELIN BERGE

VIL, SAYS BERGGREN, is this force in people that both fascinates and frightens. From a young age, the birth of fascism and Nazism captured her interest.

“I was fascinated by people’s dark sides. As a child I read a lot about the Vikings, Henry VIII and Nazism.”

Why? She reflects for a moment as we sit in the kitchen of her apartment in Berghem, before explaining how she had seen up close what people are capable of. Life has its dark sides.

Of course, Berggren is not the only historian in this field. There is probably no other period in human history that has been turned inside out as much as the one before and during World War II. But don’t think that means that every stone has been left unturned.

“There’s so much left to explore,” Berggren says emphatically. “Not least what happened in Sweden after the war, and how those racist ideas actually survived. We also need better knowledge of the boundaries between fascism and radical conservatism: what was this scene like in the 1910s and 1920s? Not to mention anti-Semitism and antiziganism. We also know extremely little about the nature and development of Islamophobia in Sweden.”

It seems like a long list.

Throughout the interview, Berggren emphasises that Swedes have a different relationship with their dark history than many of their counterparts in Europe that were drawn into the First and Second World Wars.

“In recent history, we have not experienced the turbulence of war, and have had no scores to settle. Instead, our image of Sweden as the good example – a construct that we began building during the war – has intensified. This image is not entirely true, of course. We need to scratch away at the surface of this self-image and learn that it’s a construct. It’s just as much a construct as the image Sweden Democrats now convey of a country whose culture is under threat,” says Berggren.

BEFORE GOING ANY FURTHER, let’s go back 30 years, to Hälsingland. It is here in the industrial town of Iggesund that Berggren’s roots lie. She grew up in a typical working-class home. Her parents worked at the paper mill. They would jokingly say that the smell of sulphates in the air was akin to that of money, although the Berggren family managed to avoid the worst of the stench because they lived near the mill and for the most part the fumes passed over the house. It is by no means a given that working-class children will go on to academic studies, but the environment and spirit of the 1980s was, in Berggren’s view, very accepting. Many of her classmates went on to study at different universities.

But joining those who went off to study law or economics in Uppsala didn’t feel right for her. Having
I personally do not view the Holocaust as incomprehensible. I see it as my godgiven duty to all those who suffered to understand as best I can why they were made to suffer.

been raised with a strong socialist mentality, Berggren did not want to rub shoulders in a bourgeois environment. Umeå felt more comfortable for her, and she has remained here ever since.

“My intention was to study one of the sciences, but that didn’t last long. When I came to Umeå, I had to wait a whole semester to get into the microbiology course, so I decided to take some English classes instead,” Berggren reveals.

Bacteria, fungi and viruses had to wait. She continued to learn languages, later moving on to study the history of ideas, history and philosophy. Without further ado, Berggren remained in the humanities building that she still to this day calls home and where she is now a teacher and senior lecturer in history. The focus of her essays and books has centred exclusively around Nazism, fascism and anti-Semitism. Her most recently published work is Pure Blood: A historical study of Swedish anti-Semitism, published in 2014.

“What motivates me is that intellectual challenge to delve beneath the surface, to understand what lies behind it all. Fascist ideologies are based on completely different values than those our democratic society is built on. And for that reason it’s easy to consider fascists, Nazis and anti-Semites as nutcases – but that’s not what they are.”

Berggren is careful not to generalise and is reluctant to simplify complex discussions – a trait she shares with most in the research community. The prospect of summarising the causes of fascism in a few sentences makes her visibly uncomfortable. But she tries anyhow.

“If we are to understand fascism, we must realise that it is essentially a clear and defined belief system with its roots in the past. It’s comparable to a religion, where the belief is that certain people (read white people) are naturally granted supremacy in the world. They want to recreate society based on race, with the almost Messianic message that if this doesn’t happen the world will fall apart. That we must save our race and nation.”

According to Berggren, one mistake that many make is to see fascism as a form of fear. It is not uncommon for articles about violent neo-Nazis to be based on the assumption that these young men are scared individuals; individuals who don’t like the unknown.

“That may certainly be true for some, but those at the top are not afraid. They are determined and completely convinced that their analysis is the correct one. They believe their decadent age is pulling the world out of shape and that this has to stop, i.e. that Jews, intellectuals and free-thinkers must be purged.”

THAT FORM OF PURE evil that was most apparent in the hellish machinery of the death camps is something that many still cannot comprehend even 70 years after the liberation of Auschwitz. One thing that has plagued the years that followed is the overriding question of whether those who orchestrated and carried out the Holocaust were inherently evil or merely driven by rational considerations to achieve the so-called Final Solution.

“I personally do not view the Holocaust as incomprehensible. I see it as my god-given duty to all those who suffered to understand as best I can why they were made to suffer. As for whether humans can be inherently evil or whether it is our deeds that are evil, that’s an extremely difficult question to answer,” says Berggren, and falls silent for a moment.

“Yes, there are definitely evil people who get pleasure from torturing others. In my eyes, Joseph Mengele was nothing but an evil man. But in my view people aren’t born evil; they become evil for different reasons. It is up to psychologists to explain why.”

“But,” she adds quickly, “we must be careful when using the concept of evil to explain everything. When we begin demonising these people and talking about how they’re different from us, we tell ourselves that we could never end up in a similar situation. That’s not true. We probably all have the potential, in the right – or rather, wrong – circumstances to be guilty of similar crimes.”

What Berggren is saying is that if fascism is lifted out of the realms of normality by being described as fundamentally different, we lose the ability to fight it.

She also thinks that it is unfortunate that when addressing questions of racism, genocide or other crimes against humanity, parallels are so often drawn to what happened in Auschwitz. For her, Auschwitz was unique, a historic event that will never be repeated.

“If you’re looking for a new Auschwitz, then you risk staring yourself blind and missing other genocides going on. We are perhaps now ‘immune’ to another Auschwitz, but that definitely isn’t the case for other outrages, as exemplified by what happened in Rwanda.”

BERGGREN BELIEVES that the best means of combating racism is to always view people as individuals with the same dignity and rights as oneself.

“It’s when we begin thinking in terms of stereotypes and groups, when certain features are attributed to a particular culture or nationality, that the door is opened for thoughts that can lead to wrongdoing: the idea that you can sacrifice the few for the benefit of the majority, and so on.”

“I myself struggle to avoid having prejudices,” she admits. “It has happened several times over the past few years that I’ve found myself moaning and whining about both Russian and Chinese tourists who have behaved very, very badly. From these experiences, it would’ve been easy for me to make very negative generalisations about the Russians and Chinese as entire races. In addition, both cases related to a particular social group – people who have changed class very quickly and earned a lot of money in a short space of time. I try to bear that in mind.”

Berggren believes that prejudice is just as present in those anti-racism organisations that divide people into categories as either good (those who agree) and evil (those who do not agree).

“There is an annoying self-righteousness to these groups that has a lot to do with black and white thinking. The same sort of categorisations we see racists make. I have nothing against the concept of political correctness; it’s about being inclusive and open with language. But to classify people based on the logic ‘if you aren’t with me, then you’re against me,’ that I don’t like.”

Berggren emphasises that in her own research she tries to put morality to one side as much as possible.

“Of course I have opinions, but to be a researcher you have to...
put your moral indignation to one side, otherwise it will colour your analysis. Moral panic cannot help us to combat fascism and neo-Nazism.”

She also dislikes the sweeping use of terms such as ‘fascist’ or ‘Nazi’ in different political contexts, such as when Magdalena Andersson and Stefan Löfven on separate occasions called the Sweden Democrats a neo-fascist single-issue party.

“They were both wrong to say it’s a neo-fascist single-issue party. It isn’t; fascism is a complete ideology. I also dislike it when far-left activists call the police fascists. If nothing else, it’s a completely incorrect use of the term!”

As one of Sweden’s foremost experts on the subject, she was invited to take part in SVT’s news programme, but on that occasion she turned the offer down.

“In that situation, I felt it was completely useless to be part of the debate. If I had, my participation would have made me a weapon for various groups. A researcher always has a preferential right of interpretation that we have to protect, which means we need to take some time to reflect before commenting on poisonous topical issues.”

Researchers’ reluctance to generalise or give yes or no answers to questions is also a problem for researchers who want to reach beyond the walls of academia. Universities do require researchers to be involved in public debate and publish their findings, but this can clash with other university requirements on research productivity and the number of graduating students. Let the extroverts be tempted into the former. Besides, she says that she prefers the lecture hall to the TV studio.

Nevertheless, the path she chose led her into the spotlight after her 1999 dissertation, which took her to Oxford to work with Roger Griffin, the renowned British scholar on fascism. The scene was set for an international career, but suddenly something happened that changed her outlook on life.

“My little brother died suddenly from cancer (at the age of 16) and it made me think about what I wanted in life. I made the decision not to pursue a career that meant I would have to sacrifice my personal

“\textbf{If fascism is lifted out of the realms of normality by being described as fundamentally different, we lose the ability to fight it.”}
“We have to maintain dialogue, even with people we don’t like. You can’t walk around in Parliament in fear of being tarnished or with the belief that political problems will disappear if you don’t look at them.”

life, and that has been my guiding light ever since.”

This is perhaps also why she has stayed in Umeå over the years, despite being tempted by Stockholm and Uppsala on several occasions.

“Yes, the pace here is slower, and I fly more under the radar than my colleagues in Stockholm do. But Umeå is an exciting city that is really in transition right now. We are about to lose that small-town feeling, and the city’s culture is growing in a variety of directions, which gives it real dynamism.”

As an expert in racism and xenophobia, the Sweden Democrats’ foray into politics is of course a subject that is often broached with Berggren. Here, she stresses that she doesn’t possess any deeper knowledge of the party than what can be read in the media.

“What I see is a party that is a kind of ideological hybrid. Some representatives, such as Björn Söder, are clear cultural nationalists. That was made most apparent when in an interview he said that Jews and Sami are not Swedes. Other representatives are right-wing populists, and there is a core set of individuals with roots in the White Power movement. The party has embarked on an ideological journey and we have no idea where it will end – perhaps they don’t either.”

BERGGREN DOESN’T want to characterise the Sweden Democrats (SDs) as fascist, but she believes that some of their visions are reminiscent of those that fascists have: socially conservative beliefs and the desire to restore morality to the country.

“The SDs’ rhetoric calls for a restoration of the welfare state, which resonates with the elderly in particular, who have grown up with the welfare state idea. I would like to see the Social Democrats wrench this weapon out of the SDs’ hands, and reclaim the welfare state concept. When it comes to social conservatism and morality – an area the Moderate Party and the Christian Democrats (CDs) have let run adrift – the SDs have also found some political space. Perhaps the CDs are taking some of this back now with Ebba Busch Thor – that’s probably a good thing for Sweden,” Berggren suggests.

She thinks that the current debate climate, where other politicians refuse to hold talks with the SDs, is counterproductive.

“Democracy rests on fundamental values, including those of dialogue – weighing arguments for and against – as a tool for political development and conflict management. That’s why we have to maintain dialogue, even with people we don’t like. You can’t walk around in Parliament in fear of being tarnished or with the belief that political problems will disappear if you don’t look at them.”

We have spent almost two hours talking about fascist movements and the threat they pose to society, but Berggren has not yet touched upon Islamist terrorism.

“Some argue that fascism is a concept that applies only to the Western world, but Berggren notes, anti-Semitism did not disappear after the Second World War. Anti-Semitism has existed for so long in Western culture that it has become invisible. It’s articulated by people without their being aware of it, and it’s certainly not restricted to reactionary circles – even the left expresses anti-Semitism, often masked as a criticism of Israel.”

It’s also in these circles that Berggren sees the hatred that Muslims direct at Jews being defended.

“It’s then said that because Muslims are victims of racism, as they are exposed to Islamophobia, they cannot simultaneously be its perpetrators. We must be able to hold two thoughts in our head at the same time and see that Islamophobia and anti-Semitism can exist in parallel – and be just as despicable.”

Berggren also sees how the image of the Muslim in the West is increasingly similar to that of the Jew in the 1930s.

“Today we see the same stereotyping of Muslims that Jews have suffered from in the past and to this day. The same conspiracy theories that they will take control of the world. Both Jews and Muslims are portrayed as sly and untrustworthy.”

How do you view the different caricatures of Mohammed that led to terrorist attacks?

“Personally, I don’t like humour that purely seeks to offend, and that’s exactly what these cartoons are doing... There’s a very fine line between these cartoons and the racist drawings that ended up in Der Stürmer. But I’m not saying they should be banned.”

The interview session is drawing to a close. One last question. Is she, as a researcher in human evil deeds, optimistic or pessimistic about the future?

“I’m probably more of an optimist. Sure, there are many signs of nationalism and cultural conflict today, but if it has swung quickly in one direction, it can swing the other way just as quickly. At heart, I’m a radical social liberal and believe in man’s inherent ability to change the world for the better.” Then comes a parting thought, in typically objective Lena Berggren form:

“We can use history to understand our present, but not to predict the future.”
1965. Inauguration of Umeå University

ON 17 SEPTEMBER 1965, Sweden’s fifth university is inaugurated in Umeå in a ceremony held in the great hall of the Östra Gymnasiet. The inauguration is attended by King Gustav VI Adolf and Princess Sibylla. Oncologist Lars-Gunnar Larsson is appointed Vice-Chancellor. The gold chain of the Vice-Chancellor is a gift from the city of Umeå. In his inauguration speech, the king speaks of the importance of including the humanities at the university level. At the time, the university had faculties of odontology, medicine and philosophy.

READ MORE ABOUT OUR ANNIVERSARY ON 50.UMU.SE.

PHOTOS: SÖREN ANDERSSON, ELIN BERGE, BERGSLAGSBILD, BERTIL EKHOJLTZ, MALIN GRÖNBORG, JOHAN GUNÅGUS, FREDRIK LARSSON, MIKAEL LUNDBERG, HARRY LINWALL, VK, ANDREAS NILSSON, MARTIN MATTSSON, JAN OLDFSÊN, VK, HOKAE OLDFSSON, THE POLICE, MATTIAS PETTERSSON, VIKTOR VALLSTRÖM.

BY: DAVID STARK, MARIA ODEH

It began with a dream. One day, on a field beside a large forest and close to a hospital, there would stand a university. Today, Umeå University is a dream come true and has become one of Sweden’s leading universities with an annual enrolment of over 30,000 students.
**Field of Dreams**

KING GUSTAV VI ADOLF and Princess Sibylla inaugurated Sweden’s northernmost university in the city of birch trees, Umeå, on 17 September 1965. In a mere 50 years, Umeå University has evolved into a renowned and highly sought-after university that is the third largest in Sweden in terms of applicants.

Could those who lobbied for a university in the 1940s and 50s dare hope that one day it would have over 30,000 students and 4,300 staff? There was no guarantee that this small northern city would be granted university status.

For years, politicians, officials, journalists and others in positions of power fought side by side for Umeå’s right to a university. MPs from across the political spectrum in Norrland were rejected at every turn.

At that time, other cities in Norrland aspired to their own universities, including Östersund and Härnösand. A bitter battle ensued between Härnösand and Umeå. It became a hot topic in the local papers and even in the national press. Ultimately, Umeå emerged victorious.

---

**1968. A growing campus**

THE SOCIAL SCIENCES BUILDING and University Library opened in 1968. That year, the philosophy faculty split into separate facilities for mathematics, social sciences and humanities. The Faculty of Arts was established by parliament the year before. The university now has between 2,000 and 3,000 students.

---

**1969. A new take on the Northern Lights**

UMEÅ UNIVERSITY’S SYMBOL or mascot was found through a nationwide competition held in 1967. Ernst Nordin (b. 1934), originally from Selånger in Medelpad, won with his Northern Lights – a rectangular, and polished stainless steel sculpture with welded pipes – erected two years later. Standing on four legs with an inbuilt lighting system, the sculpture was subsequently moved in 1995 to its current location by the university pond to make way for the Teacher Education Building.

Nordin has created several other public artworks, including the portrait of the king on the one and ten kronor coins from 2001. In 2012 he won Sveriges Riksbank’s competition to create the motifs for Sweden’s new coins, to be released in 2016.
1970. Universum inaugurated

FIVE YEARS AFTER its inauguration, the university had 8,000 students. Universum opens its doors in 1970, boasting everything from a restaurant (lunch cost SEK 5.50) and student union offices to a hairdresser and study rooms. The Universum building is now also home to Umeå’s largest conference facility – Aula Nordica – with capacity for up to 1,000 people.

Universum was the third building constructed close to the pond and originally comprised two parts – the restaurant and the student union – although in practice the 3,600 square-metre first floor of Universum was used as one facility.

Universum quickly became a venue for dancing and parties. Eurovision winners Abba played a gig in the so-called ‘Red Sea’ (Cosmos) in January 1975. Despite this being the final date of the legendary band’s European tour, the concert failed to be a success. The audience quickly left after the show, and missed the planned encore – Waterloo.

1972. Rent hike strikes out

STUDENTS FOUGHT AGAINST increased rents for six months. In January 1972 this culminated in a rent strike, when the landlord and the authorities cut and sawed their way into boarded up student dorms on Gluntens väg.

The landlord was Stiftelsen Umeå studentbostäder – SUSB – whose demand of an eight per cent increase in rent was too much for the students.

According to Västerbottensnytt television news, in October 1971 some 3,000 students refused to pay their rent, and a general meeting on 1 November decided in favour of an official rent strike.

Among those present was television personality Staffan Ling, who made a film about the event.

"The picket line was mainly at Ålibacken on Gluntens väg. They barricaded themselves in and wouldn’t let in any of the media apart from us. And 40 years later, I guess I can now reveal that we even took bike racks in with us to chain to the stairs,” Staffan Ling explained during an interview with Västerbottensnytt television news in 2011.

The strike concluded with evictions and the rent increases were implemented. At the same time, the students formed a tenants association that gave them the right to negotiate rents with future landlords.

1973. Distance learning

IN 1973, UMEÅ UNIVERSITY became one of the first schools in Sweden to offer distance learning. Over the first few years, courses were offered in administrative technology, English, the history of ideas, mathematics, economics and contemporary Swedish.

At that time, distance learning was based on the available methods of correspondence, and students studied at home using self-teaching aids, postal correspondence and sometimes cassette tapes. They also had telephone contact with their teachers, and occasionally met at the university for short periods to go through the more difficult aspects of their coursework including exams.

Distance learning is still popular at Umeå University with around 3,700 full-time students enrolled in 2015.
1977. First entrance exam in Sweden

“If a boat travels three knots for an hour and five minutes, how far will it go? This was one of the questions on the first Högskoleprovet – or Swedish Scholastic Aptitude Test – a standardised university entrance exam developed at Umeå University. From 1977 to 1991 the exam was used as a selection tool for certain applicant groups. Beginning in 1991, new university admission rules were introduced so that selections would be based on either grades from upper secondary school or the result of this exam.

The number of applicants taking the exam across Sweden varies between 65,000 and 145,000 per year amounting to over a million people in total since 1991. Only nine have pulled off a perfect score.

1981. Bildmuseet inaugurated at Gammlia

A cornerstone of what is now the Arts Campus is the centre for contemporary art and visual culture, Bildmuseet. This state-owned art gallery was founded by Umeå University in 1981 and for its first 30 years was located next to the Museum of Västerbotten at Gammlia. The original focus was creating a gallery for contemporary cultural policy with the objective of “giving people the opportunity to participate in their own cultural activities” and “countering the negative effects of commercialism.” Today Bildmuseet is the place to see international contemporary art in Umeå, as well as retrospectives on art history, photography, architecture and design.

An eye-catching 36-metre tall building on the banks of the Ume River has been home to the museum since 2012. Designed by Henning Larsen Architects in partnership with White Architects, the building has a Siberian larch façade and has been described as one of the world’s most attractive university museums.

In 2014 Bildmuseet was a favourite for the Council of Europe Museum Prize as well as a runner-up in the Swedish Museum of the Year Award. That same year the museum was awarded a special prize by the jury of the European Museum of the Year Award.

1978. School of Forestry inaugurated

The importance of forests for Umeå University – and vice versa – cannot be underestimated. In 1978 the School of Forestry, a part of the Swedish University of Agricultural Sciences (SLU), opened its doors.

In 1999 the Umeå Plant Science Centre (UPSC) was founded as a partnership between the Department of Forest Genetics and Plant Physiology at SLU, and the Department of Plant Physiology at Umeå University.

UPSC, a centre for experimental plant research, has proven its status as a formidable research environment on several occasions. In 2013, the Berzelii centre was highlighted as a world leader in forest biotechnology. In the same year, Professors Ove Nilsson, Pär Ingvarsson and Stefan Jansson attracted international attention when they presented a unique mapping of spruce genes.

This picture is from the inauguration of the School of Forestry. The artwork, which is in an equally prominent location today, was created by Anders Åberg.
1984. Dallas comes to Umeå

BY 1984 SWEDEN had been suffering from Dallas fever for three years—the same amount of time as the TV series of the same name had been on SVT. The series not only left its mark on how we watched television, but also influenced the architecture of the time, as evidenced by ‘Dallas House’, which was completed in 1984 and can be seen next to the northern entrance of the University Hospital. The building is home to a pharmacy, library, waiting room and, above all, the Department for Odontology.

1988. Research for the future

RESEARCH ISN’T JUST about finding answers for here and now—it’s about gathering and preserving information for a very long time to come. With this in mind, Umeå University has worked tirelessly over the years on its national research databases. Betula—a study of dementia, ageing and memory—was started in 1988. The ongoing study has been running for over 25 years using the same participants. The year before, a project was started with the county council to develop one of the world’s first medical biobanks. The numerous blood samples collected have been vital to the discovery of new risk factors for cancer, diabetes and cardiovascular diseases. It is also thanks to our employees at Umeå University that anyone can now follow the progress of various people over many years and through a variety of life events. According to the Swedish Research Council, the demographic database which was started in the early 1970s to digitise things such as church records is now one of the country’s most important international infrastructures, with over one million registered people.

1989. Green trade on the rise

THE UMEÅ SCHOOL OF Business and Economics was inaugurated in 1989 and quickly evolved into a major international facility. Today, students from several different countries study here and the departments place considerable emphasis on the foreign placements and field studies abroad for over 100 students a year. In the spring 2015 the Umeå School of Business and Economics was environmentally certified, which means that the 250 students who graduate every year will start their careers well prepared for an environmentally friendly way of working. The certification has given the school a taste for the field. This autumn, two new master’s programme specialisations will be launched—economics specialising in environment and resource economics, as well as in health economics.

1995. The university reaches 25,000 students

THIRTY YEARS AFTER its inauguration, Umeå University for the first time had more than 25,000 students. And with this sharp increase in the number of students, the campus continued to grow and grow. The Behavioural Sciences Building, MIT Building and Technology Building had been completed in 1994. The idea behind the MIT Building, located between the University Library, Universum and the Sciences Building, was to bring the different parts of the campus together into a cohesive whole. The Teacher Education Building was inaugurated in 1996.

1983. Universitetshallen built – IKSU sport takes shape

THE SPORTS CLUB Idrottsklubben Studenterna i Umeå, or IKSU, currently has over 20,000 members, making it one of the biggest in the country. When the association opened its first sports hall, Universitetshallen, in 1983, no one could have imagined the future development that would take place. IKSU sport now occupies over 21,000 square metres and is the largest training facility of its kind in Europe.

The association has 16 different sections, the most successful of which has been floorball. The women’s team won its first national championship in 2005. Club teams have brought home a total of four national championships and three European Cups. IKSU co-operates with Umeå University, not least through the Umeå School of Sports Sciences and the Section for Sports Medicine. A large part of the university’s sports education is conducted at IKSU sport, including its elite sport policy that allows students to combine their studies with high-level training. The university is also a reason why the successful floorball team has an easy time recruiting new players.
1998. Sara Lidman donates archive to University Library

THE RESEARCH ARCHIVE at the University Library is home to original manuscripts and other documents from authors including Torgny Lindgren, Folke Isaksson and Carl-Göran Ekerwald. Sara Lidman’s archives have also been kept here since 1998.

Sara Lidman (1923-2004) was born in Missenträsk in Västerbotten. She made her début in 1953 with the book *The Tar Still*, whose setting and language are taken from her home turf. Alongside her successful authorship, Lidman was recognised as a formidable debater, not least during the Vietnam war.

Towards the end of the 1970s she returned home to Missenträsk to start work on what became known as *Jernbaneeposet* – her major cycle of works on the modernisation and colonisation of Upper Norrland. In 1978 she received an honorary doctorate from Umeå University.

Just like its research archive, the university’s Academic Archive Online, DiVA, which features publications from the university’s researchers and students, has seen incredible growth over the years. In 2013, the archive reached a key milestone when over a million downloads took place. Of these, just over a third were made in Sweden. In all, visitors from a total of 200 countries have downloaded texts from Umeå’s DiVA.

1997. Brännboll Cup gets world championship status

IT GOES WITHOUT SAYING that the brännboll world championships should be held in Sweden, and no one would argue against these being held in Umeå each year. The Brännwalls team fought off 43 other competitors to win the first competition in 1974. In the years that followed, interest in the competition exploded with over 1,000 competing teams by 1990.

However, Brännwalls, Jesu lärjungar, Styva lemmar slår till and the other former winners of the cup couldn’t call themselves brännboll world champions. However, the 1997 winners, BK Rel, could, as this was the year that the Brännboll Cup gained world championship status.

BK Rel are now seven-times world champions, surpassed only by the team Sikta mot tjejen, which has won the women’s championship nine times. The brännboll championships are held each May. The Brännbollsyran Music Festival is also held in conjunction with the championships.

1997. Institute of Technology founded

THE INSTITUTE OF TECHNOLOGY was founded at Umeå University as a result of an already comprehensive range of courses offered. The first Master of Science Programme in Engineering Physics kicked off already in 1988. Another three Master of Science Programmes in Engineering were offered when the Institute of Technology was founded.

Today, the institute falls under the Faculty of Science and Technology. This makes technology research strongly integrated to scientific research. Approximtely 400 new students are accepted each year to one of the university’s currently seven Master of Science Programmes in Engineering, and approximately 200 students are accepted to one of the five Bachelor of Science Programmes in Civil Engineering being offered.

The Master of Science Programme in Engineering Physics is still offered at the university and is popular among students. It is also the only programme of its kind in Sweden that received top marks in the Swedish Higher Education Authority’s latest evaluation.
2004. Umeå Biotech Innovator established as an incubator

UMEÅ BIOTECH INNOVATOR, UBI, is one of several companies that not only have strong connections with but also play an important role for Umeå University. Owned by Uminova Innovation AB, UBI is an incubator that was established in 2004.

Its purpose is to stimulate the development of outstanding biotech research that contributes to successful business ideas for a global market. Aside from being a hub for business acumen and development, Umeå Biotech Innovator provides researchers with lab facilities.

One of the many people who have been helped by UBI to develop their business idea is Christer Malm, a lecturer in the Department of Community Medicine and Rehabilitation. Malm and his research team have developed an analysis method to uncover blood doping in elite athletes.

1998. Digital hotbed

UMEÅ UNIVERSITY was quick to get in on the act when digital developments began simmering in the early 1990s. The university got off to an impressive start in the digital arts with the creation of HUMlab in 1998. HUMlab is a digital laboratory for researchers and students from the Faculty of Arts. The 500-square-metre lab now houses a complete landscape of digital screens used not only for art projects but also to visualise research. The concept has even been copied at the Arts Campus under the name HUMlab-X.

Before HUMlab, the university had distinguished itself in digital research as early as 1989, when studies into so-called super computers commenced.

2000. Vaartoe – Centre for Sami Research founded

VAARTOE IS the southern Sami name for the Centre for Sami Research (CeSam) and means “mountain with a view that reaches for miles.” Vaartoe also symbolises an interdisciplinary, cross-border and international way of working. Vaartoe/CeSam co-ordinates and initiates research in and on Sápmi, focusing on the cultures, society, history and languages of Sami and other indigenous peoples.

It is a hub for doctoral candidates and researchers from the university’s various disciplines. In collaboration with Sami representatives, organisations and communities, the centre has managed to create a positive research environment in which research is enriched by creative meetings and an exchange of ideas.

2002. Gastronomy on campus

THE 180-ECTS GASTRONOMY programme at the School of Restaurant and Culinary Arts offers two specialisations – Creative Cookery and Hospitality. Creative cookery is something that Swedish celebrity chefs such as Mathias Dahlgren and Marcus Samuelsson are well known for. They are also two renowned gastronomists that the School of Restaurant and Culinary Art has enticed into being assistant professors.

The School of Restaurant and Culinary Art was inaugurated in 2002.
2006. Start of research lunches
RESEARCH LUNCHES are a popular way for the people of Umeå to find out about the exciting research currently underway at the university. The lunches are held on Thursdays during the autumn and spring semesters at Kafé Station. Each session features a 20-minute presentation followed by a Q&A session. This autumn’s programme features diverse topics, including “children’s eating habits” and “the integration of immigrants in the labour market”.

Research Day, first held in 1998, is also an important event as it gives active Umeå researchers the opportunity to present their findings and ideas on topics of interest to the public. Research Day is led by television personality Sverker Olofsson, an honorary doctor at the host department, the Faculty of Medicine.

2006. Umeå gets closer to space
SINCE THE INAUGURATION of Umevatoriet in the spring of 2006, the people of Umeå have been able to get much closer to space—at least visually and in terms of knowledge. Umevatoriet is an observatory and planetarium run as a partnership between the university and the Umeå Municipality. The aim is to promote interest in science, technology and mathematics. The Umevatoriet planetarium features a spectacular starry sky in which visitors can follow certain space events.

2008. A sprightly old spruce
HIGH UP ON Mt Fulu in Dalarna is a windswept spruce. It may not look like much to the rest of the world, but the fact is this half-bare evergreen is the world’s oldest living tree. It’s named ‘Old Tjikko’, after its discoverer’s Husky, and has roots that quite literally go back at least 9,550 years. Over these years, Old Tjikko has had several trunks as parts of the tree died and new ones formed. For this reason, counting the growth rings isn’t an option, but in 2008 researchers from Umeå University were able to date the spruce using carbon-14 dating of wood residues in the soil around the tree.

2008. Interdisciplinary gender research
FROM GENERAL MEDICINE to philosophy—gender research can and should be applied to every field. This is one of the ambitions of the Umeå Centre for Gender Studies, UCGS. On 1 January 2008 the programme was launched by the former Women’s Studies Forum and the Graduate School of Gender Studies. Jonas Sjöstedt, current leader of the Swedish Left Party, Vänsterpartiet, was the first to chair the programme. Gender studies at the university dates back much further than 2008, however. The first course in women’s studies was launched as early as 1976 with gender roles as its primary focus. 21 years later Britt-Marie Thunén was named Sweden’s first professor of gender studies.

Some 30 doctoral candidates—mainly from Umeå University and Mid Sweden University—are now affiliated with this research environment, named as a Centre of Gender Excellence by the Swedish Research Council.
2007. **SEK 100 million donation**

*WHEN THE BALTICGRUPPEN* real estate company’s founder and principal owner, **Krister Olsson**, donated SEK 100 million to Umeå University in 2007, it was one of the largest donations ever received by a Swedish university. The donation was intended for promoting scientific research and education at the university.

As Umeå Arts Campus was being erected (inaugurated in 2012) a deal between the landlord Balticgruppen and Umeå University was signed regarding a rental discount of SEK 90 million. Until last summer, the Arts Campus was wholly owned by Balticgruppen until part of it was sold to Wallenberg Foundations AB. Krister Olsson is now looking forward to new opportunities for Balticgruppen to “continue investing in Umeå and the city’s growth.”

The creative arena at Umeå Arts Campus comprises the Umeå Institute of Design, the Umeå School of Architecture, the Umeå Academy of Fine Arts, HUMlab-X, Bildmuseet and Sliperiet. The Umeå Institute of Design has attracted international attention over the years and has for several years been ranked one of the best design programmes in the world. Sliperiet is the most recent addition to Umeå Arts Campus and one of Umeå University’s investments in collaboration and innovation. Sliperiet offers new forms for meetings, studios and workshops for research, instruction and collaboration.

---

**2009. Sports Sciences – Going for Gold**

*STUDENTS AND professors of the Umeå School of Sports Sciences* had already put the school on the map long before it earned the status of national sports university this spring. **Helena Jansson** combined medical studies with an elite specialty in orienteering. In 2009 she became world champion in sprint. Afterwards she thanked the unique approach offered by Umeå University in terms of its adapted study programme for elite athletes. Since then, Jansson has won world championship medals almost every year. The photo is from 2011 as Helena Jansson won middle distance gold.

In 2008, professor of sports medicine, **Håkan Alfredsson**, gained at least as much attention in the sports world. He and his methods were put in the spotlight when **Zlatan Ibrahimović**’s “jumper’s knee” had to be cured in time for him to play in the European Football Championships in Switzerland and Austria. And was it cured in time? Yes! Zlatan scored the first goal for Sweden in the tournament.

The Umeå School of Sports Sciences was established in 2000. The school is in the lead of Swedish sports schools – in good company with the Swedish School of Sport and Health Sciences at the Royal Institute of Technology, and the University of Gothenburg and Chalmers University of Technology.
2011. Emmanuelle Charpentier and MIMS puts Umeå University on the world map

IN MAY 2011 Umeå University inaugurated the Laboratory for Molecular Infection Medicine (MIMS), which attracted the attention of top international researchers before it had even opened its doors. The laboratory plays a key role in carrying out infection research in the hope of finding new antibiotics.

French bacteriologist Emmanuelle Charpentier has been affiliated with MIMS as a guest professor and group leader since 2009 and has since continued to put MIMS on the world stage, not least through her discovery of CRISPR-Cas9.

In recent years Charpentier has received a raft of international awards for her research and this spring she featured on Time Magazine’s list of the world’s 100 most influential people. At the university’s anniversary celebrations on 17 October this year, Charpentier will receive Umeå University’s EC Jubilee Award 2015.

2012. Arcum inaugurated

UMEÅ UNIVERSITY’S arctic research, covering all faculties, is both abundant and cross-disciplinary. Hence, on 12 December 2012, the Arctic Research Centre, Arcum, was inaugurated at Umeå University. Three years later, nearly 200 affiliated researchers have joined.

One of the main tasks of Arcum is to present all arctic research being conducted. The centre also provides researchers with great opportunities for collaborations in for instance project management, supervision, international networks, seminars and strategic planning.

With a substantial number of affiliated researchers, Arcum today constitutes a very strong research environment.

2014. Umeå, European Capital of Culture

THE UNIVERSITY AND not least the Arts Campus and Bildmuseet played a key role when Umeå was passed the baton to become one of Europe’s two Capitals of Culture.

Umeå’s and Västerbotten’s ancient Sámi roots were a common theme throughout the city’s year as Capital of Culture. The programme was divided into the eight Sami seasons, and there was a strong Sami influence in the opening ceremony held on the frozen Ume River in front of an audience of 55,000 visitors.

Bildmuseet opened the year with the Nammaláhpán exhibition in which Katarina Pirak Sikku followed in the footsteps of race biologist Herman Lundborg into Sápmi.
2015. Major investment in Molecular Medicine research

SWEDEN WILL REGAIN its world-leading position in medical research. An important part of that plan is the Wallenberg Centre of Molecular Medicine at Umeå University.

The centre focuses mainly on broad molecular medical research and research areas that are recognised as strong at Umeå University, for instance cancer, metabolic diseases such as diabetes, diseases in brain and nervous system, and severe infections.

A very important link and resource in the research is the County Council of Västerbotten’s population-based biobank, Biobank norr, which together with genealogical data provides a unique resource for research.

Behind the investment in the centre at Umeå University, inaugurated in April 2015, stands Umeå University in collaboration with the County Council of Västerbotten, the Knut and Alice Wallenberg Foundation, the Kempe Foundations and the Cancer Research Foundation in Norrland.

2015. Police cadets get their B.A.s

POLICE TRAINING was launched at Umeå University in 2000, but until 2015 students were unable to receive ECTS in their policing work as this wasn’t a primary field. Things changed this year when the university became the first in Sweden to give police students a university degree. Starting in the autumn semester, students undertaking their police training in Umeå will receive 120 ECTS in policing work.

2015. Culture thrives at the university

CULTURE HAS ALWAYS played a key role at the university. The Umeå Student Theatre was founded in 1964 with Kay Pollak, Staffan Ling and Peder Falk among its first members.

One association that has left its mark on Umeå’s cultural scene is Humlan, which is still active today some 34 years after its formation within the Umeå Student Union in 1981. Humlan hosts the annual Umeå Open Festival, which was held for the first time in 1998, when Umeå was named Pop City of the Year. Prior to 2015, the organisers had let the Umeå Festival grow and spread out over several days and stages. Artists included Hello Saferide, aka Annika Norlin, a psychology student at Umeå University.

Since 2003, another essential part of the university’s culture scene has been Culture on Campus – a globally unique investment in culture in an academic environment.

“We’ve always wanted to make our campus more lively and we are great believers in the value of a creative break. Culture on Campus is also an important hub for employees and students from different academic disciplines,” explained founder and project manager Jonas Ericson in conjunction with the scheme’s tenth anniversary in 2013.

Culture on Campus was a major draw during the Caught by Umeå European tour ahead of the city’s year as European Capital of Culture in 2014.

2015. Ranked best in Sweden by international students for the fourth consecutive year

THIS YEAR’S SUCCESS in the International Student Barometer’s (ISB) survey is actually just one in a series of accolades and records worth reporting from this decade.

In 2013 the university was ranked the best university under 50 years old in the Nordic region. That same year the Umeå Institute of Design was ranked best in the world in the International Design Excellence Awards and the Red Dot Institute’s list of design programmes in Europe and the Americas.

As the number of accolades and the campus itself grows, so does the number of people applying to study in Umeå. 28,000 applicants listed Umeå as their first choice ahead of the start of the autumn term in 2014. This was 1,200 more applicants than the year before and an increase well above the national average.

Student numbers at the university hit a record 37,000 in 2011, of which 15,000 were full-time students.
UMEÅ OFFICIALLY became a university city in 1963. On 17 September two years later fanfare followed when King Gustav VI Adolf inaugurated the university. The ceremony was held at Östra Gymnasiet. The oncologist Lars-Gunnar Larsson was appointed Vice-Chancellor.

In 1965, the Medical School and the Dentistry School joined the University as the Faculties of Medicine and Odontology were later complemented by the Faculty of Mathematics and Sciences as well as the Faculty of Philosophy for the social sciences.

This picture is from 1964, as the buildings for the physiology and botany were being built. They came into use between 1965 and 1967.

CAMPUS UMEÅ is located in the centre of the city so that all the university’s courses and programmes are within walking distance, facilitating natural encounters between all students, researchers and other academics. Campus Umeå is also home to the Umeå branch of the Swedish University of Agricultural Sciences.

The Arts Campus, which is situated in a beautiful location on the banks of the Ume River, was built on a former industrial site. Umeå University has located its arts and humanities programmes here with the intention of promoting the development of a creative environment and hub for architecture, design, art and vocational activities.

READ MORE ABOUT OUR ANNIVERSARY ON 50.UMU.SE.

50 YEARS OF INNOVATION
INNOVATORS

THE NAVIGATOR PLANS A ROUTE. AN INVENTOR FINDS A SOLUTION. AN INNOVATIVE DESIGN BECOMES A HOSPITAL NECESSITY. ALL OUR INNOVATORS HAVE ATTENDED THE INSTITUTE OF DESIGN AT UMEÅ UNIVERSITY – AND HAVE BRIGHT IDEAS ABOUT HOW TO CHANGE THE WORLD.

BY: ERIK HÖRNKVIST, MARIA ODEH
PHOTO: MIKAEL GUSTAVSEN, ANDREAS NILSSON

2015 & BEYOND
THE NAVIGATOR

THE PROJECT COULD easily have failed and been the end of a design career. Instead it was a turning point that laid the foundations for what is now People People, a design and innovation agency.

Martin Willers was still a student at the Umeå Institute of Design when his sun lotion designed specifically for surfers was given airtime on TV4’s morning news programme, Nyhetsmorgon. But the anticipated success failed to materialise. Instead the lotion was shown to contain zinc oxide, which is deleterious to marine fertility.

“It was a wake-up call. Design shouldn’t just work at a superficial level. As designers, our role on spaceship Earth isn’t to be the orchestra playing happy music; we have to take command of the bridge and change course... or at least build a lifeboat,” says Martin Willers.

He has plotted a course that is by no means modest. By taking small, seemingly insignificant steps, a sustainable industrial revolution will be created. Like creating a loudspeaker that lasts for a lifetime, because the technology can be updated in a single action.

It began as a purely conceptual idea – to show what sustainable design could look like... and sound. Yet People People’s see-through speakers soon became a global bestseller, without a detour via one of the global electronics giants.

Crowdfunding has dramatically changed the conditions for design. You can now bypass traditional funding channels by using a 3D printer to present a product idea at virtually no cost.

The four founders got to know each other at the Umeå Institute of Design. Nowadays Martin doesn’t design that much himself but works with the design team to help the company evolve in a rapidly changing landscape.

MARTIN WILLERS founded the industrial design studio People People in 2010. The four founders met at the Umeå Institute of Design at Umeå University. At People People, Martin is involved in design-driven business development for several international start-ups and large corporations, including Samsung, Narrative, Filippa K and IKEA. The company was recently named one of Europe’s hottest start-ups by technology magazine Wired.

“AS DESIGNERS, OUR ROLE ON SPACESHIP EARTH ISN’T TO BE THE ORCHESTRA PLAYING HAPPY MUSIC; WE HAVE TO TAKE COMMAND OF THE BRIDGE AND CHANGE COURSE... OR AT LEAST BUILD A LIFEBOAT.”
A TRADITIONAL DESIGNER is typically a genius who creates tactile, unique and attention grabbing products. But that was then. At the Veryday design agency, Diana Africano Clark manages a sizeable team developing products and services that don’t always shout the loudest, but which are rooted in human needs.

Last spring, IKEA launched a furniture series with built-in wireless chargers. Veryday’s task was to design the interaction between charger and furniture in a way that was visible yet discreet.

“It’s interesting to see what people think about this type of technology. Electricity and wireless technology are invisible. We put a lot of effort into looking at how people should perceive these products and how to explain a built-in function that isn’t visible in the stores.”

Diana started out as a product designer in her home country of Colombia. She went on to study in Madrid for a few years before ending up at the Umeå Institute of Design at Umeå University, where her focus was on interaction design. Upon graduation and before she started working at Veryday, Diana worked as a researcher – a role which she continues to serve for the Umeå Institute of Design as well as the University of Southern Denmark.

“My background as a researcher and my experience of several different cultures is reflected in everything I do. Veryday is an international agency, which I think is essential for conducting the kind of in-depth research that we do. We need to understand different people and what motivates them.”

Digitisation is the primary driving force behind development, whereby design will provide answers to entirely new questions.

“Technology shouldn’t govern but rather support how we live our lives. We visit people at home to understand how we can achieve this. We’re interested in people’s day-to-day lives and how they live.”

Diana believes that design is increasingly about developing services to improve people’s quality of life rather than conjuring up gadgets to lure consumers. ●

DIANA AFRICANO CLARK is a design strategist at the Veryday design agency. She works within a wide field, designing products and services for both the digital and physical environments. After graduating in 2002, she stayed on for a time as a researcher at the Umeå Institute of Design.

“TECHNOLOGY SHOULDN’T GOVERN BUT RATHER SUPPORT HOW WE LIVE OUR LIVES. WE VISIT PEOPLE AT HOME TO UNDERSTAND HOW WE CAN ACHIEVE THIS. WE’RE INTERESTED IN PEOPLE’S DAY-TO-DAY LIVES AND HOW THEY LIVE.”
AWARDS IN ALL their glory. Özgür Tasar takes genuine pride in his profession when he reads raving user reviews or sees a stranger buy a product he designed.

“A consumer holding a razor in a store is just something they’re going to take home and use. But for me it’s truly personal. I know that item inside out and have devoted many hours into its tiny nitty gritty details. It creates a relationship between me and this stranger. I love it!”

After graduating with a Master’s in Advanced Product Design from the Umeå Institute of Design, Özgür worked as senior designer for Philips in the Netherlands. He has been involved in the development, improvement and innovation of award-winning personal care products. Co-operation in its truest sense pervades his work. The product development team covers not only graphic design and ergonomics, but also psychology, mechanics and the results of lifestyle studies.

In recent years Özgür has moved away from the bathroom cabinet and more towards the hospital room.

“The stakes are much higher when it comes to meditech design. Many different people must be able to use the products – patients, medical staff and sometimes parents looking after their children. It takes a lot of time and energy to strike the right balance in my work.”

Medical technology is advancing rapidly, and several of the projects Özgür has been involved in are more about solving entirely new problems than about developing existing products.

“Starting with a blank page in uncharted territory can feel overwhelming, but I’m a real science geek so I’m right at home when it comes to learning new things about something like, say, medicine. And if my design makes people healthier or happier, then I can feel that I’ve contributed to the world, which is arguably something we all want to do.”

ÖZGÜR TASAR received his Bachelor’s in Industrial Design from the Middle East Technical University, METU, in Ankara, Turkey in 2000, and his MA in Advanced Product Design from the Umeå Institute of Design at Umeå University in 2005. He was hired by Philips Design in 2005 and now works as a senior design consultant in the field of healthcare research and innovation.
Forests have always played a key role in Norrland’s identity. But how can we manage them in the best possible way? And how can we find the right balance between their financial, aesthetic and environmental values? Our approach to these issues have varied throughout history. Think asked forest researcher Anna Sténs to reflect on how we view forests – from Carl Linnaeus’s era to the bio-economies of today.
“Great pine forests stand desolate and unavailing, for no one needs the timber, which falls and rots away.”

When Carl Linnaeus travelled through Lapland in the early 1730s, he was struck by the abundance and plenitude of the forests. This was a couple of decades before coal-powered ironworks started being established along the Västerbotten coast and tar burning was widespread with tar a major export, as well as before forestry company initiatives to exploit sawn timber further inland in Västerbotten.

By proposing that forests were not utilised in the pre-industrial period and were therefore wasted, Linnaeus was quite mistaken. Even then, Västerbotten’s forests were used for a variety of purposes. Although the county was sparsely populated, both reindeer-herding Sami and local residents used the trees and forestland for grazing, timber, firewood, bark harvesting and wet hay meadows. Nearer to the coast, the timber was used for building boats and ships. Other wood-consuming activities that had varying impacts on the forests included charring, nitrate and potash production and tar-boiling.

In the mid-18th century, ironworks were built in Olofsfors and Robertsfors. As the iron industry required a great deal of charcoal, the majority of the workforce was needed out in the forests to fell trees, build and guard charcoal stacks and transport charcoal to the mills. The forest-related industries we are most familiar with today, of course, are forestry and wood and pulp. In the mid-19th century, the production of sawn timber increased, becoming a major industry in Norrland. Steam-powered saws were set up in rows along the coast for the shipping of sawn timber, at first mainly to the UK.

In historical texts, we see repeated accounts of how the government, farmers and forestry companies in Norrbotten and Västerbotten started doing all they could to make money from the forests. The state modified and defined the ownership of state and private forestland through a so-called “delimitation,” and in so doing clarified what was and was not state land. At the time, many farmers were accused of felling trees in the royal forests to sell to forestry companies—a phenomenon that by the turn of the 20th century had become known nationally as “baggböleri.” The term derives from the many court appearances of James Dickson—long-time owner of the large sawmill company Baggböle Sägverk, located just outside Umeå—all of which related to accusations of purchasing illegally felled timber from farmers. The forestry companies also became notorious for buying up farmers’ forests at below-market prices in order to gain access to cheap timber. In more recent times, this phenomenon also fell under the term “baggböleri.”

Preventing the total exploitation of the forests—especially those along the Västerbotten coast—in the late 19th century the government introduced a law that would prevent the felling of trees under a certain size. This remained in place until 1948, when national forest legislation came into effect for the Norrbotten and Västerbotten forests. The debates surrounding the delimitation of state lands, and the legislation prohibiting this forest exploitation, also became a means for the state to attempt to bring order to the forest as a resource, as well as to forestry in Norrland in general.

However, the forest’s bounty isn’t limited to the mere production of goods that can be sold for money. Forests and trees are also valuable in other ways, a belief shared by Linnaeus. Our interest in preserving and improving the beauty of the forests and their trees has been around since ancient times, and by the 18th century there were already textbooks on the subject. In the early 20th century, the practice of forest aesthetics was defined as “the doctrine of the tended forest’s beauty.”

In the 19th century, with the growth of industrialisation and the ideas of national romanticism, which looked into the past for inspiration, there was a growing interest in a wild, magnificent and unspoilt countryside. The philosophers, artists, writers and scientists of the day were fascinated by the places untouched by human hands, and what they saw as typically “Swedish” nature. Their involvement in politics and non-profit associations such as the Swedish tourism association, STF, and the Swedish Society for Nature Conservation (SSNC) eventually led to the establishment in the early 20th century of Sweden’s—and Europe’s—first nine national parks on state land. The majority of these parks consisted of magnificent mountain landscapes in Norrbotten County, but they also encompassed some smaller agricultural and forest areas.

In the early 20th century there was great interest in individual, “peculiar” natural objects as well. Texts on forestry drew attention to unusual snake firs, giant oaks and misshapen pines. Therefore the year that the national parks were founded, a law was passed on the preservation of natural monuments, with the aim of protecting these singular, remarkable natural phenomena.

In the modern era, interest in the “wild,” the “natural” and the “sublime” has often played a key role in deciding which landscapes are saved. Where forests are concerned, then, ancient woodland has been seen as something of an ideal. However, forest scientists have also worked towards other ideals of beauty—as have philosophers, writers and artists. They have admired the harmonious, orderly and “civilised” beauty of cultivated lands, as well as “picturesque” landscapes rich in contrasts. Landscapes that man has put to use are often viewed more highly than wild landscapes, at least where literature and art are concerned.

At the end of the 19th century, the German forest officer and politician Heinrich von Salisch published a handbook on forest management entitled Forstästhetik (1885). His views on the aesthetic value of the forest are characterised by notions of a cultivated landscape put to human use. One of his key points is that...
the forests should be used for timber production, yet managed so that they can be beautiful and pleasant areas to spend time in. This is also how the term “forest aesthetics” was defined in Sweden. Forest aesthetics therefore related to the “beauty of the tended forest” instead of the beauty of forests that were wild and untamed.

However, it was only in the late 1960s and early 1970s that interest in the aesthetic and social value of the forest really took off. Behind this burgeoning interest was a dissatisfaction with the transformations of the Swedish landscape that had gained momentum after 1950, as well as with modern forestry practices and farm closures. At the same time, demand was increasing for forest areas that were suitable for recreation.

Politicians responded by organising investigations into the impact of forestry on the landscape and the environment, and within the field of forestry science a number of studies were commissioned on people’s preferences and recreational habits with regard to the forest landscape.

This kind of research is still being carried out today, and there have been a number of constants in the starting points and decisions reached over the years. One common recurring preference observed in the Nordic countries is that forests with mixed species of trees are generally preferred to monocultures of spruce trees. However, forests of large adult pines that have been properly thinned always score highly. Dense and dark forests with a lot of undergrowth seem to be less popular, because it is more difficult to move around and orient oneself in such spaces.

The aesthetic value of forests has often been associated with recreational forests and people’s need for relaxation. Consequently, one early suggestion was that the forests near urban areas should be given the most attention. It was in these areas that forest owners would have to adapt their forests to fit visitors’ desires. It was a proposal that Heinrich von Salisch, for example, made in his book on forest aesthetics from the late 19th century.

Feodor Aminoff, department head at the Swedish National Forest Enterprise, explained the idea further in 1927 when he stated that: “forests near cities and larger communities call for special treatment. One must understand that such forests are intended not only to give their owner direct financial gains, but also to afford rest and refreshment to the eyes and minds of the people.” These arguments continue to ring true today, when different interests are competing for the woodland areas near cities.

The surveys conducted have also made apparent a number of conflicts, such as the question of who should take responsibility for the forests’ aesthetic value. During the 1960s and 1970s, the message to forest owners was clear: it was the responsibility of the “public”, i.e. central and local government, to create forests that people wanted to spend time in. Landowners would be compensated for any disturbances caused. It was to their advantage for the authorities to take over land near urban areas and turn it into natural or recreational reserves. A landowner would be compensated by the state regardless of whether they had made the decision to invest in “social and leisure operations” of their own free will.

However, it was only in the late 1960s and early 1970s that interest in the aesthetic and social value of the forest really took off. Behind this burgeoning interest was a dissatisfaction with the transformations of the Swedish landscape that had gained momentum after 1950, as well as with modern forestry practices and farm closures. At the same time, demand was increasing for forest areas that were suitable for recreation.

Politicians responded by organising investigations into the impact of forestry on the landscape and the environment, and within the field of forestry science a number of studies were commissioned on people’s preferences and recreational habits with regard to the forest landscape.

This kind of research is still being carried out today, and there have been a number of constants in the starting points and decisions reached over the years. One common recurring preference observed in the Nordic countries is that forests with mixed species of trees are generally preferred to monocultures of spruce trees. However, forests of large adult pines that have been properly thinned always score highly. Dense and dark forests with a lot of undergrowth seem to be less popular, because it is more difficult to move around and orient oneself in such spaces.

The aesthetic value of forests has often been associated with recreational forests and people’s need for relaxation. Consequently, one early suggestion was that the forests near urban areas should be given the most attention. It was in these areas that forest owners would have to adapt their forests to fit visitors’ desires. It was a proposal that Heinrich von Salisch, for example, made in his book on forest aesthetics from the late 19th century.

Feodor Aminoff, department head at the Swedish National Forest Enterprise, explained the idea further in 1927 when he stated that: “forests near cities and larger communities call for special treatment. One must understand that such forests are intended not only to give their owner direct financial gains, but also to afford rest and refreshment to the eyes and minds of the people.” These arguments continue to ring true today, when different interests are competing for the woodland areas near cities.

The surveys conducted have also made apparent a number of conflicts, such as the question of who should take responsibility for the forests’ aesthetic value. During the 1960s and 1970s, the message to forest owners was clear: it was the responsibility of the “public”, i.e. central and local government, to create forests that people wanted to spend time in. Landowners would be compensated for any disturbances caused. It was to their advantage for the authorities to take over land near urban areas and turn it into natural or recreational reserves. A landowner would be compensated by the state regardless of whether they had made the decision to invest in “social and leisure operations” of their own free will.

“Today, a number of larger forestry companies have realised that forest aesthetics are good PR. But here too we’re seeing a shift. Instead of social and aesthetic values being viewed as a financial burden, they are being highlighted as potentially a direct economic asset.”
Researchers are in general agreement that pressure on forests will increase in the future, unless world politics, economics and environmental problems take a more positive direction.

That forest owners could gain financially from aesthetic and social concerns was rarely brought up. In some cases, the possibility of indirect financial benefit was highlighted: investing – be it a little or a lot – in these areas could help promote a more sympathetic environment, and a pleasant area to showcase to the surrounding world. That is to say, using the forest’s aesthetics as a form of PR.

Today, a number of larger forestry companies have realised that forest aesthetics are good PR. But here too we’re seeing a shift. Instead of social and aesthetic values being viewed as a financial burden, they are being highlighted as potentially a direct economic asset. With the growth of the tourism industry, there are incentives to make more money on a modified form of forestry, perhaps for the smaller forest owners and entrepreneurs in particular.

With this renewed interest in the social and aesthetic value of the forests, another small shift has occurred. The focus is no longer solely on forests near urban areas. Now, the importance of promoting these values in rural areas – where the rural population is emphasised both as the producers and the consumers of this experiential value – is also being highlighted.

The early 20th century notion of protecting nature which lay behind the establishment of the national parks and natural monuments was driven by three main factors: a scientific interest in nature and culture; a desire for adventure and recreation; and a wish to preserve the beauty of nature. Throughout the 20th century, concepts such as the preservation of nature, conservation, landscape management and environmental concerns served as umbrella terms for all three of these factors in both debates and legislation. Sometimes the terms have been divided up into social conservation vs. ecological conservation, sometimes into conservation of the natural environment vs. conservation of the cultural environment, but in the context of the forests, the terms “conservation” and “environmental concerns” have often been allowed to refer to all interests that fall outside of timber production.

“Conservation” is used as an umbrella term to this day. In the environmental targets of the forestry conservation legislation, it is stated that:

Forest research vital for Umeå

Forest Research First gained attention in Umeå with the establishment of the ‘North Sweden Centre for Forestry Research’ in 1966 to make this abundant natural resource more economically viable.

A one-year bachelor’s programme in forestry production theory was established in 1971. This became a future “nursery” for forest researchers who later ended up at the Swedish University of Agricultural Sciences (SLU).

During the 1970s, parts of the old School of Forestry gradually moved from Stockholm to Umeå. This became the forestry faculty at the newly founded SLU. The physical proximity between Umeå University and SLU strengthened Umeå’s position as an international research environment.

Collaborations in recent decades include:
• The Umeå Plant Science Centre (UPSC), founded in 1999-2000 by the Department of Plant Physiology at Umeå University and the Department of Forest Genetics and Plant Physiology at SLU;
• The Centre for Environmental and Natural Resource Economics (CERE), founded in 2009 by economists from the two universities;
• Umeå University and SLU are also involved in Sweden’s largest on-going forest research project, Future Forests (2009-2016). Financed by Mistra, Skogforsk and the forest industry, Future Forests is the most extensive project to date.

The forest shall be used so that plant and animal species that naturally belong therein are given the means to survive under natural conditions and in robust numbers. Endangered species and natural habitats shall be protected. The cultural values of the forest – as well as its aesthetic and social values – shall be protected.” (Government bill 1992/93:226)

According to the Swedish Forest Agency’s current regulations, shrubs, individual trees, copes and dead trees shall be left untouched when felling in consideration of both the “scenery” and biodiversity.

Nowadays, the legislation and its related provisions can seem quite fuzzy and implicit. The most explicit consideration made since the 1990s concerns the preservation and promotion of biodiversity, which has indirect negative and positive effects on aesthetic values.

Forest owners are in general agreement that pressure on forests will increase in the future, unless world politics, economics and environmental problems take a more positive direction. The forest industry still occupies a leading position among Swedish exports, and Sweden is still one of the world’s largest exporters of paper.

In discussions surrounding the climate and a future bio-economy, many have spoken of how forests must be increasingly used, both for energy production and for a range of other products, in order to stimulate sustainable growth. In more recent years, the forests’ recreational and – indirectly – aesthetic values have been emphasised. For the first time in a long time, the government has put forward targets for outdoor recreation policies. Research and healthcare are also talking more about the forest’s importance in improving our ability to recuperate and feel good. The extensive research programme Outdoor Recreation in Change has also shown that a large percentage of the population say that they spend time in the woods on a regular basis, countering concerns that our largely urbanised population would rather stay inside and watch TV.

There is also an increasing interest, particularly in research, in the traditional forestry skills that Sami culture has passed down through the generations. When I was in British Columbia in Canada a few years ago, I was shocked to see that there – as in the United States – forestry research and forestry education so often highlight indigenous peoples’ perceptions of nature and rights. It was there that I discovered a semi-spiritual approach to nature that was juxtaposed with many examples of on-going and planned land exploitation on a large scale. I sometimes wish that we could allow ourselves a more obvious spiritual relationship to the forest here in Sweden, too, but I believe that much of that was lost in our efforts to make as many economically rational and scientifically-based decisions as possible during the latter half of the twentieth century. There was less and less willingness to make demands based on soft or un-measurable values.

However, research today is being carried out on such soft values in new ways, as in the concept of ecosystem services, which also includes intangible cultural values. Perhaps the aesthetic value of forests will get another boost and allow us to find new ways and reasons for arguing in their favour.

* Parts of this text were previously published in the textbook Grön entreprenör: Skogens sociala värden – Forskningen visar vägen, Susanna Lundqvist and Lena Johnson (eds.), Alnarp: the Swedish University of Agricultural Sciences (SLU), 2014, 72-77.
EACH SEMESTER, hundreds of students from all over the world come to study at Umeå University. Some stay on as doctoral candidates, while the vast majority return home after completing their studies. But they take a little piece of Umeå back home with them – some of them in the form of alumni associations.

In recent years, alumni from Umeå University have set up local alumni associations throughout the world. The first networks were launched in 2012 in China – in Beijing and Shanghai – and since then a number of new networks have emerged in Asia and Europe.

“THIS IS A GREAT way for alumni to stay in touch with Umeå and other former Umeå students. The local networks organise activities where past and present students and staff can meet, make new contacts and find out more about what’s going on at the university,” says Jessica Bergström Grahn, International Alumni Co-ordinator at Umeå University.

Alumni associations can also help with student recruitment and offer practical assistance and advice to students and researchers from Umeå University who are on international exchange programmes in an association’s region.

Martin Jara from Ecuador and Renuka Jain from India are two Umeå alumni whose time spent studying in Norrland has left lasting impressions.

“I grew in so many ways”

NAME: Martin Jara. 
AGE: 30
JOB: Entrepreneur.

Martin, you came back to Umeå to give an inspirational graduation speech for international master’s students. How was it being back?

“Sometimes, it felt like being in a dream – I would suddenly feel nostalgic and get flashbacks of so many great memories. Bus stops, bike rides, my friends, the campus – it all felt like being home again, even if only for a short while.”

What else did you manage to do on your trip back to Umeå?

“I went back to the places where I used to go as a student: Fysikgränd dorm, Lindellhallen Hall, iksU sport and Lake Nydala. I went into the University Library, sat down under the clock and remembered cramming for exams. I remembered that special smell that wafts over you when you open the front doors into the Social Sciences Building on the way to Lindell Hall. It made me remember the lectures, the coffee breaks and the enthusiasm I felt when I first came to the university to build my future. Much has changed, but the feeling in the city is still the same.”

What impact has your time as a student in Umeå had on you?

“I try to keep a little bit of Sweden with me in my everyday life and in relation to others in my work. I’m currently starting my own business and trying to create an egalitarian work culture where everyone’s opinion matters. I want there to be a place for us to socialise and get to know each other on a deeper level, as well as time for coffee breaks. I’ll always be grateful for my time at Umeå University. I grew in so many ways.”

“I want to share my experiences with young Indians”

NAME: Renuka Jain. 
AGE: 46
JOB: Chief Scientific Officer, Avesthagen Limited, Bangalore.

Renuka, you’re one of two contact people for the fledging Indian alumni network. What made you decide to get involved?

“I got a tremendous amount of experience through my time in Umeå, where I both studied and worked. Naturally, this is something I want to share with all the young people in India, so that they too can gain something from what Umeå has to offer. My involvement in the alumni association follows the principle that you should share what you receive.”

What’s your best memory from your time in Umeå?

“I have many wonderful and lasting memories of my stay in Sweden. I was astonished and amazed by things such as its nature and landscape. The memory that stands out the most was getting to see the northern lights for the first time.”

What are you working on right now?

“I’m Chief Scientific Officer at Avesthagen Limited in India. My research focuses on the development of novel food and ingredients for metabolic diseases such as diabetes, bone diseases, cardiovascular diseases, cognitive disorders and discovery of metabolite markers for early diagnosis of breast cancer.”
BOOKS
Katarina Gregersdotter’s reading list

THRILLS, FEAR AND SARCASM

Horror in Lapland, the tearful story of 15-year-old Samantha in Tanzania, and some cutting sarcasm from Nanna Johansson.

KATARINA GREGERSDOTTEN teaches English Literature at the Department of Language Studies at Umeå University. Her research interests are primarily contemporary Anglo-American and Scandinavian crime fiction, and she reads as much for pleasure as she does for work. Think magazine asked for her top six book recommendations.

Stallo
Stefan Spjut, Faber & Faber (2015)
On par with a Stephen King best-seller, this Swedish horror story will either have you trembling or force you to put it down for a breather. The Stallo are mystical creatures; giants living up in the forests of Lapland. Their presence seems accepted by some, but not by others. Try to catch your breath as you read this well-written horror story.

How to cure a feminist
Nanna Johansson, Galago (2013)
Only available in Swedish. Nanna Johansson demonstrates her versatility with biting sarcasm, cut-and-paste montages, cartoons, some slightly longer texts and much more besides. You will laugh so much that at times you will be reduced to tears. Sure, it is often quite childish, but it is also very political. Nanna Johansson shows as clearly as possible that humour can be used as a means of resistance, that it is an effective weapon and that laughter does not detract from the gravity of a situation.

Rubbernecker
Belinda Bauer, Bantam Press (2013)
The plot is simple yet multifaceted. As a young boy, Patrick loses his father in a tragic traffic accident, after which he becomes obsessed with trying to understand death. Bauer has a rare ability to create characters who come to life almost immediately.

The Weight of Blood
Laura McHugh, Hutchinson (2014)
A fantastic début novel. Teenager Lucy’s mum disappeared under unexplained circumstances when Lucy was small. The community where she lives is small and rumours and gossip travel fast. Who was Lucy’s mum? Was she really a witch? Did she really leave her child voluntarily? Lucy has to confront herself, her family and her whole community in what is a touching portrayal of an upbringing as well as an exciting crime novel.

The Weight of Blood
Laura McHugh, Hutchinson (2014)
A fantastic début novel. Teenager Lucy’s mum disappeared under unexplained circumstances when Lucy was small. The community where she lives is small and rumours and gossip travel fast. Who was Lucy’s mum? Was she really a witch? Did she really leave her child voluntarily? Lucy has to confront herself, her family and her whole community in what is a touching portrayal of an upbringing as well as an exciting crime novel.

Exile
Jakob Ejersbo, MacLehose Press (2011)
Sadly, Ejersbo passed away before his trilogy was published. Exile is the first part and is one of my absolute greatest reading experiences. The rootless and rebellious 15-year-old Samantha goes to school in Tanzania because that is where her parents live and work. She lacks any kind of connection to Denmark and feels neither white nor black. This incredibly poignant portrayal of a young life will reduce you to tears.

Alias Grace
Margaret Atwood, McClelland & Stewart (1996)
Atwood’s most luminous novel by far. The real-life Grace Marks lived in Canada and was convicted of murder. Atwood takes Marks’s fate, gives her the right of interpretation, and suddenly we have a novel that turns the concepts of “story” and “truth” on their heads. I’ve read it at least 15 times, but I discover new dimensions and ideas each time. Gender and class are addressed with utmost seriousness and also with biting irony.

Belinda Bauer
Rubbernecker
Bantam Press (2013)
The plot is simple yet multifaceted. As a young boy, Patrick loses his father in a tragic traffic accident, after which he becomes obsessed with trying to understand death. As an anatomy student he gains direct access to dead people, but when he suspects a murder, he meets with opposition. Belinda Bauer has a rare ability to create characters who come to life almost immediately.

Laura McHugh
The Weight of Blood
Hutchinson (2014)
A fantastic début novel. Teenager Lucy’s mum disappeared under unexplained circumstances when Lucy was small. The community where she lives is small and rumours and gossip travel fast. Who was Lucy’s mum? Was she really a witch? Did she really leave her child voluntarily? Lucy has to confront herself, her family and her whole community in what is a touching portrayal of an upbringing as well as an exciting crime novel.

Nanna Johansson
How to cure a feminist
Galago (2013)
Only available in Swedish. Nanna Johansson demonstrates her versatility with biting sarcasm, cut-and-paste montages, cartoons, some slightly longer texts and much more besides. You will laugh so much that at times you will be reduced to tears. Sure, it is often quite childish, but it is also very political. Nanna Johansson shows as clearly as possible that humour can be used as a means of resistance, that it is an effective weapon and that laughter does not detract from the gravity of a situation.

JAKOB EJERSBO
Exile
MacLehose Press (2011)
 Sadly, Ejersbo passed away before his trilogy was published. Exile is the first part and is one of my absolute greatest reading experiences. The rootless and rebellious 15-year-old Samantha goes to school in Tanzania because that is where her parents live and work. She lacks any kind of connection to Denmark and feels neither white nor black. This incredibly poignant portrayal of a young life will reduce you to tears.

MARGARET ATWOOD
Alias Grace
McClelland & Stewart (1996)
Atwood’s most luminous novel by far. The real-life Grace Marks lived in Canada and was convicted of murder. Atwood takes Marks’s fate, gives her the right of interpretation, and suddenly we have a novel that turns the concepts of “story” and “truth” on their heads. I’ve read it at least 15 times, but I discover new dimensions and ideas each time. Gender and class are addressed with utmost seriousness and also with biting irony.

Laura McHugh
The Weight of Blood
Hutchinson (2014)
A fantastic début novel. Teenager Lucy’s mum disappeared under unexplained circumstances when Lucy was small. The community where she lives is small and rumours and gossip travel fast. Who was Lucy’s mum? Was she really a witch? Did she really leave her child voluntarily? Lucy has to confront herself, her family and her whole community in what is a touching portrayal of an upbringing as well as an exciting crime novel.

Belinda Bauer
Rubbernecker
Bantam Press (2013)
The plot is simple yet multifaceted. As a young boy, Patrick loses his father in a tragic traffic accident, after which he becomes obsessed with trying to understand death. As an anatomy student he gains direct access to dead people, but when he suspects a murder, he meets with opposition. Belinda Bauer has a rare ability to create characters who come to life almost immediately.

Margaret Atwood
Alias Grace
McClelland & Stewart (1996)
Atwood’s most luminous novel by far. The real-life Grace Marks lived in Canada and was convicted of murder. Atwood takes Marks’s fate, gives her the right of interpretation, and suddenly we have a novel that turns the concepts of “story” and “truth” on their heads. I’ve read it at least 15 times, but I discover new dimensions and ideas each time. Gender and class are addressed with utmost seriousness and also with biting irony.
Play and functionality when the pieces come together

THE CHICAGO-BASED Colombian Carlos Arturo Torres graduated from the Umeå Institute of Design in 2014. His degree project, Iko, has now attracted attention around the world. Iko is a modular system allowing disabled children to build and programme their own prostheses. The system is designed together with the toy company Lego’s experimental research department, Lego Future Lab.

Using the popular plastic bits, children can customise their prostheses according to their own needs — and at the same time have fun and get an outlet for their creativity. Carlos Arturo Torres told the British newspaper The Guardian about the importance of finding the right balance between play and functionality and an ambition to “allow kids to explore their creativity and create something they could be proud of.”

“Sometimes a functional element is all they need, but at other times it might be a spaceship, a doll’s house, a telescope, a video game controller or a swim fin,” he says in an interview with the newspaper.

Carlos Arturo Torres and Iko have received several international awards, one of which is the American Core77 Design Award.
The river and the aquarium

T IS AS IF THE WHOLE COUNTRY was tilted up and facing north. Like a salmon spawning upstream, it is human nature to climb into highlands to pursue or be pursued by prey both wild and tame. With picks and shovels, by tooth and nail, we labour against sliding down to below-lying perils like smelters, sawmills, slaughterhouses and conflicts.

Despite these travails, anything with shallow and unearthed roots like salmon, ore and timber washes downstream. Reindeer, and their predators, amble south for the winter. Even young minds, like water, follow the flow. Maybe they can now splash down in Umeå instead! The road south along the E4 can wait. Welcome!

Umeå University was founded 50 years ago. Luminaries such as Hanna Ljungberg, Susanna Alakoski, Stefan Löfven and Annika Norlin have all studied here. Maybe you too can go home with more than just a degree. The possibilities are endless. And if, contrary to expectations, you dislike our city’s glass cathedrals, you can always climb back to higher ground. We apologise if there are fewer and fewer trees and telephone poles to hold on to, both in the city and further inland, and for the sinkhole we have not yet had time to cover.

“T HIS APOL O GISES IF THERE ARE FEW ER AND FEW ER TREES AND TELEPHONE POLES TO HOLD ON TO, BOTH IN THE CITY AND FURTHER INLAND, AND FOR THE SINKHOLE WE HAVE NOT YET HAD TIME TO COVER.”

Back to school. When I visit, I sometimes wander the corridors oblivious to those odious exams I once had to sit for. In one building there is an old concrete bunker with a small auditorium. It is still there but it is now housed in glass, like a shipwreck in an aquarium. High ceilings. Low floors. That feeling of being small and insignificant returns, as it does in so many places around here. Parks and squares, stadiums and living rooms, all as open as a clearing in a forest, bright and fresh. In many ways, schools are aquariums. I remember my student years as a backdrop to the reality we were being trained for. The municipality showcased us students to its guests, and our student loans crushed dried noodles into lakes. When we were then flushed out to sea, there was a strong sense of so this is what it’s really like. We all long to return to that reality of university life, one of methodological and analytical models; or we try to use the latter in our extra-curricular reality as best we can. There are many different ways of acquiring knowledge, both inside and outside of these glass walls – of becoming stronger, to survive and to save our communities.

By the way, these boundaries – walls, shop windows, social divides – are neither impenetrable nor solid. There is always a foothold, so as not to get washed away with the currents, like a suckerfish in a waterfall. The reindeer can always climb back up the hillsides in the summer. We are strong and can fight the current, like a salmon in the spring. We do, after all, speak of schools of fish.

BUT THE MOUNTAINS are neither barren or inhospitable, a sight made possible by telescope. Just ask those who live here. They stay close to the slopes like heather and birch, not to be swept away by the winds and the currents. Is this what the monumental architecture of the new city is trying to copy? That you have to bend down to see the texture of the porcelain and the cracks in the tarmac? To emulate, or just be? Is it a piece of land stretching out into the river, or along the river? Don’t forget what it used to look like.

Author and web developer. Mikael studied at the Social Work Programme at Umeå University and is Bonnier’s only literary debutant for 2015.