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From ‘desirable’ to ‘necessary’

The Internationalisation Inquiry set up by the Swedish government submitted an interim report at the beginning of 2018. Its proposals focus on increasing mobility, and on how Sweden is to promote its development as a knowledge nation. One concept that is used in the inquiry is “integrated internationalisation”, which is the term used to describe a situation in which an international perspective permeates all core activities. The report claims that this is an “institutional necessity, not just a desirable possibility”.

AS LIU’S VICE-CHANCELLOR I see a great deal of evidence for the ongoing process of internationalisation, and I see clear proof that it has transitioned from something that is desirable to something that is absolutely necessary. It becomes obvious when I consider how we live in a world in which students, researchers and new co-workers are recruited in global competition (the number of universities in the world is considerably greater than 20,000). It is also obvious when I consider collaboration, as when researchers from different directions work together on the challenges facing us, and when we receive and despatch students who want to study abroad.

ONE OF THE SUGGESTIONS of the Internationalisation Inquiry for how we can become even better is to increase collaboration – between government agencies, between institutions of higher education, and with the surrounding society. Consider, for example, that Sweden as a country is relatively well-known internationally (although it must be admitted that we are often confused with Switzerland), but our Swedish universities are not equally well-known. In this case, it makes sense that we present ourselves together, under the strong branding of “Sweden”, in order to recruit more students.

IT IS ALSO IMPORTANT to maintain close contact with all our alumni, who are our most prominent ambassadors. We now have more than 100,000 (of whom 25% are members of the LiU Alumni network) in 100 countries!

THIS ISSUE OF LIU MAGAZINE provides several examples of the benefits of increased internationalisation. It shows how researchers and master’s students can be attracted to come here, and contribute to making LiU a better university. And that we can also attract a sporting star or two, people who shine brightly on the international scene.

HELEN DANNETUN, VICE-CHANCELLOR
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LiU is international

Linköping University attracts students, teachers and researchers from all around the world. You meet some of them in this edition of LiU Magazine.

Two master’s students from India, Naveen Sasidharan and Abhishek Jacob Chethikatt, have started a company developing a digital tool to bridge language barriers in medical care. Their language app is now available for some of the languages spoken by many immigrants in Sweden, and has been tested in several clinics.

Swiss hockey goalminder Florence Schelling came to Linköping to play in the town’s women’s ice hockey team – Linköping Hockey Club (LHC). In parallel, she started a master’s degree in business administration. The past six months have been extremely busy for Florence! After playing in the Winter Olympics in South Korea, she played a key role in ensuring that LHC reached an honourable second place in the Swedish women’s hockey league. While at the same time racing her way to the finishing line of her degree.

Other articles take up a student who has carried out field studies in China, describe work to save the waters of the Baltic Sea, and explain how mental diagnoses may be influenced by where in the world you come from. We also have stories about the current activities of some international alumni from Linköping University.

Together, the magazine offers a Swedish smörgåsbord, ready for you to get your teeth into what most appeals to you. We hope you enjoy the magazine!
Scientific research is international and researchers take it for granted that work takes place across national borders. They find it natural to seek new collaborations, all over the world. Mobility is a plus and is an integral part of being a researcher in most fields. What does moving through the international world of research involve?

STORY SUSANNA LÖNNQVIST & KARIN SÖDERLUND LEIFLER
PHOTO ANNA NILSEN
When you’re actually working in the laboratory, the difference is not so great. There are, of course, differences between countries about such matters as regulations governing certain types of experiment, but working at a lab bench is pretty much the same, wherever you happen to be,” says Stefan Koch.

Stefan Koch studied biology and took his doctor’s degree at Münster in Germany, then travelled as a postdoc to Atlanta in the US, and to Heidelberg in Germany. He has now ended up in Sweden and Linköping, working at the Wallenberg Centre for Molecular Medicine (WCCM).

He conducts basic research within inflammatory bowel diseases, looking at how cells in the intestinal wall signal to each other and the surroundings. His work covers both disease conditions, and what happens as the intestine recovers from damage.

STEFAN KOCH didn’t hesitate when he was faced with moving to a new country.

“The chance to participate in forming the research at the university and to be part of a larger network with like-minded individuals was extremely attractive. I have been given the opportunity to build something from scratch. If you compare the start-up package I received from Linköping University with what other major institutions of higher education were offering, it was extremely favourable for me to become a WCMM Fellow,” says Stefan Koch.

He sees it as an advantage to be involved at an early stage and to form the network into a well-functioning unit, spanning not only departmental boundaries, but also boundaries between universities.

WHEN IT’S A MATTER of mobility within the research world and moving outside of your comfort zone, Stefan Koch is convinced about one thing: It’s the best experience you can have.

“It gives you the opportunity to learn more about yourself and about other cultures. I’m convinced that everyone should do it at least once in their life. You can always return if it doesn’t work out, or travel on to somewhere else. Just pack and go!”

The Wallenberg Centre for Molecular Medicine (WCMM)

WCMM is an initiative from the Knut and Alice Wallenberg Foundation to strengthen research in the life sciences in Sweden, during the period 2016–2024. Four centres have been set up: Linköping, Lund, Gothenburg and Umeå. SciLifeLab in Stockholm and Uppsala is a collaboration partner for WCMM, contributing research infrastructure for the complete network. The focus of research in Linköping is molecular medicine at the borderland between people and technology.
“Good coffee is important everywhere!”

“...I’m extremely interested in what proteins look like at the atomic level. In order to understand how they work in the body, you have to know their structure,” says Eleonore von Castelmur.

She has studied the atomic structures of both muscle proteins and proteins that are involved in cancer.

“Many researchers devote their life to one particular disease, but I’m more interested in understanding at the molecular level how changes in the sequence and structure of proteins affect the way they act both in health and in disease.”

**ELEONORE VON CASTELMUR** has worked in research for 13 years, and has moved between countries several times during her career. She grew up in Switzerland, and has worked at the University of Basel and the University of Liverpool. Her most recent post was at the Netherlands Cancer Institute in Amsterdam.

“I find it exciting to live and work in different countries, because it gives you the chance to get to know different cultures both inside and outside the laboratory. If you haven’t seen several ways of doing things, it’s difficult to know whether your way is the best way.”

Some things are constant, though. “Good coffee is important everywhere.” Eleonore von Castelmur’s mother is Swedish, so she could already speak the language when she arrived, and this helped to solve many practical problems when preparing to move here at the beginning of 2017. But speaking Swedish turned out to be something of a double-edged sword.

“Of course, lots of things are easier because I can speak Swedish, but I’ve never lived here before. Some people think that because I can speak Swedish I know how everything works, but that’s not the case.”

**SHE HEARD ABOUT** the Wallenberg Centre for Molecular Medicine from a friend who thought that one of the positions here would suit her. The WCMM fellows at LiU are employed at different departments on three of the campuses.

“This is a major investment into young researchers, and seems to have gathered an interesting group of researchers with a wide range of expertise. I’m sure we can gain excellent synergy effects, and will be able to collaborate in project efficiently, even though we are more geographically dispersed than the other WCMM centres.”

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**Good advice when moving abroad**

- If you can, learn the language!
- Find a hobby outside of work, so you can meet other people.
- Ask colleagues for help and advice, particularly if they are also from another country. They have often faced the same practical questions, such as how to open a bank account, and can give useful advice.

Eleonore von Castelmur has worked in research in Switzerland, Great Britain, the Netherlands - and since the start of 2017 in Sweden.
Human trafficking in sports, such as running and football, is widespread in many African countries. Together with a group of teacher’s training students and three African sports stars, LiU researcher P-O Hansson is building awareness of the risks involved – using an app.

To fight human trafficking

IN SPORTS

Human trafficking in sports, such as running and football, is widespread in many African countries. Together with a group of teacher’s training students and three African sports stars, LiU researcher P-O Hansson is building awareness of the risks involved – using an app.

STORY EVA BERGSTEDT
PHOTO P-O HANSSON, SIA KAMBOU, KERSTIN LUNDELL & CHARLOTTE PERHAMMAR
Create an app about the risks of human trafficking, for young sportspeople in Africa. That was the task assigned to LiU researcher P-O Hansson in January this year. With help from LiU students and three African sports stars, the work will soon be done.

The assignment came from a non-profit foundation in Switzerland. “They contacted me because I work in mobile learning,” says P-O Hansson, researcher and teacher in the teacher’s training programme at Linköping University. Over many years he has established contacts in East Africa, where together with students from his programme he has managed numerous school projects in collaboration with African partners. A few years ago he completed his PhD, which investigated mobile learning in Kenya. “I wanted to discover how mobile technology can aid learning.”

The results pointed to enormous possibilities for users. Mobile technology opened a new world for them, many of whom had little education. Suddenly they could learn about the world around them, learn new languages and start companies. And it continued from there. P-O Hansson has subsequently started a number of mobile projects in eastern Africa, together with local actors and the UN. These include courses in human rights, entrepreneurship and anti-doping, as well as sexuality and reproductive health. “When I was asked if I could help develop a free app and create digital courses on human trafficking, it seemed obvious to say yes.”

More than one million young people worldwide are subject to human trafficking, according to UNICEF statistics. This means that vulnerable, poor children and young people can be pulled from their home environments and transported to another country where they are used in hard labour and prostitution. Some of this trade is sports-related. Talented young sportspeople can be tricked into travelling to another country by traffickers who use contracts that look attractive on paper, but in reality lead to exploitation and abuse.

“We’ve understood that human trafficking against the backdrop of sports such as football and running is widespread in several countries.”

The app, which is mainly for young football players, is designed as a game, a sort of life story where the player encounters various events on the way to an international career. Based on different situations, the player is faced with a number of choices. These in turn lead to different scenarios – some good, some bad.

“It helps young people become more aware of what can happen, based on the choices they make. They also learn about children’s rights.”

A private company in western Sweden is working on the technical development of the app, which is expected to be finished in the autumn. Nine civics majors from the teacher’s training programme at LiU are creating the content.
“Some of them have just been on a two-week field course in Ethiopia and Kenya, where they met young people and football coaches, and found out what content the app might need. Next, the students who didn’t make the trip will take over, testing the content and design on young people here in Sweden.”

Samuel Rasmusson and Sakarias Bengtsson are two of the students working on the content.

“The aim is to create a learning resource that really works for the players. We met a football coach in the slums of Nairobi. He stressed the importance of also including information about drugs and STDS in the app,” says Samuel Rasmusson.

Samuel, who is studying to be an upper secondary school teacher in civics and history, learned some important lessons during his time in East Africa.

“Now I have my own experiences from there, which I can incorporate into my teaching in Swedish schools.”

Sakarias Bengtsson is studying to be an upper secondary school teacher in civics and mathematics. He and some fellow students will soon trial the pilot version of the app on lower secondary pupils in Linköping, several of whom have African background.

“Of course we want to get the app to work as well as possible, but I also have a personal interest in how technology can be used in the classroom, and in the mobile phone as a resource. So it will be educational for us students in several different ways,” he says.

TO GET THE CHILDREN and young people to use the game in the app, three sports stars – Didier Drogba, football player from Ivory Coast, Kenenisa Bekele, runner from Ethiopia and Fowsiya Mohamud Ali, basketball player from Somalia – have been recruited. The app features short films where they talk about the risks of human trafficking.

In June a prototype of the app will be presented at several football clubs in London.

“They are interested in attracting talented African players, and want to take social responsibility for them,” says P-O Hansson.

In the autumn the app will be launched in three West African countries: Mali, Burkina Faso and Sierra Leone.

“In these countries human trafficking is widespread, so we’re starting there, before expanding to East Africa.”
LetterMoose helps children read and write

The robot group at Linköping University has acquired a new member. LetterMoose saw the light of day only a few months ago, and his reading and writing skills have already given him first prize in an international robot competition.

“The moose not only writes himself: he can also show children how to write, and he can communicate using sound. ‘I don’t think that word is spelt properly; let me show you how it’s done,’ says Sofia Thunberg.

Fredrik Löfgren, Sofia Thunberg and Sam Thellman from the Division for Human-centered systems (HCS) at Linköping University developed the moose, LetterMoose, when planning to attend the Human Robot Interaction 2018 conference in Chicago, held early in March. This was their entry to the student competition that was organised during the conference, and it brought them victory.

“It stuck out a bit from the other entries: it’s just great that people seemed to appreciate it,” says Sam Thellman.

LetterMoose is principally intended for use with children with autism, since they may find it easier to open themselves to a robot than to a person. The aim is that children will be able to take it home from school and work with it on their own.

High in global ranking

Linköping University is number 28 in a global ranking of universities less than 50 years old.

The universities have been evaluated by the QS World University Rankings. The top six places are held by Asian universities, led by Nanyang Technological University of Singapore.

LiU entered the top 50 just five years ago. Of the young universities in Europe, LiU is now ranked tenth.

The QS ranking is based on indicators such as academic reputation, staff/student ratio and internationalisation.

The QS World University Rankings which disregards the university’s age is topped by American and British universities. Here Linköping University is number 287.

All in all there are roughly 20,000 universities in the world today, of which about 16,000 are younger than 50 years old.

She received honorary doctorate

Swiss language researcher Lorenza Mondada received one of the 2018 honorary doctorates awarded by Linköping University. She received the honour together with Pia Minati, Margaret Sandström, Peter de Wit, Niklas Ekdal and Jan Carlson, all working in Sweden, at the Commencement Ceremony on 26 May.

Professor Mondada is a world leader within the field of language research that studies the relationships between language, the body and the surroundings in human interactions and actions. She has been guest professor within the Research Environment for Language and Culture at LiU and her continued collaboration with LiU researchers has resulted in not only common scientific meetings but also publications with an international impact.

Lorenza Mondadas's most recent project deals with communication when buying cheese in different countries.
Across Europe without a penny

For a week they travelled through Europe, with no money in their pockets. They bartered their way to everything from dinners and skydiving to a 5-star hotel room. Of 200 teams from all over the world, the team from Linköping University ended up winning the whole competition.

When LiU students Gustav Seidel, Isac Ottosson and Tobias Andersson heard about the competition, they registered right away. It ran from 10 to 17 April, and the participating teams had to make their way across Europe, stopping in at various checkpoints, doing a number of tasks, before finally getting to Amsterdam.

With neither money nor mobile phones, the teams had a number of tins of energy drink that they traded for transport, accommodation and food.

“We were lucky with the transport – we got 30 or so free train trips,” says Gustav Seidel.

All three are experienced travellers, and have backpacked in the spirit of "It’ll work out”.

“I would definitely recommend doing something like this. It has been really educational, we’ve had to practice our argumentation, how you can turn a no into a yes. And it’s been wonderful to be away from my mobile phone,” says Isac Ottosson.

After covering more than 4,000 kilometres in six countries, and passing 11 checkpoints, the team reached to finishing line in Amsterdam as overall winners.

An armchair making an impression

Could this be a design icon of the future? Malmsten students Joel Fjällström and Rebecca Petrini decided they wanted to be noticed. They succeeded – their Mammut armchair is causing quite a sensation.

It has received an award for creative design from Ung Svensk Form, a prestigious scholarship from the Danish textile manufacturer Kvadrat, and been tested by British royalty. What a way to start your career, and what a way to end three years’ study at Malmstens Linköping University!

Joel Fjällström from the Furniture Design programme and Rebecca Petrini from the Furniture Upholstery programme created Mammut together during the autumn of 2017. It is now part of a traveling exhibition in which the work of young designers is being promoted at several Swedish design centres, before ending up in Tokyo in October.
An app to cross language barriers in medical care

Two LiU master’s students from India have developed a tool to cross language barriers between personnel and patients in the medical care system. Their language apps are now being tested in several clinics.

STORY LENNART FALKLÖF
PHOTO PER WISTBO NIBELL & JEPPE GUSTAFSSON

Patients can rapidly obtain appropriate care with the aid of the language app.
Imagine a man who has recently fled from Syria and comes to a Swedish emergency department with severe chest pain. He can hardly speak Swedish or English, no one among the personnel can speak Arabic, and it's difficult to get hold of someone who can interpret.

The doctor or nurse brings out a pair of tablet computers with a specially designed language app. Questions are displayed on the tablet, and the computer reads them aloud to the patient in Arabic. He, in turn, uses the app to give answers that the personnel understand. They can rapidly determine what the problem is, make a diagnosis and start treatment without unnecessary delay.

The scenario above is just one example of how a new tool for communication across language barriers can make a difference in medical care provision. Responsible for the newly developed app is the small start-up company Worldish, and its founders Naveen Sasidharan and Abhishek Jacob Chethikatt. They arrived at LiU three years ago from Kerala in south-eastern India to take masters’ programmes in electronics engineering and industrial engineering and management, respectively.

“We had actually met earlier, in India, at a meeting that Business Sweden had arranged in our hometown of Kochi,” remembers Naveen Sasidharan. “I had long had an ambition of starting a company and was trying to decide between studying in Sweden or Germany. I ended up in Sweden because I heard that there was a positive climate for innovation and entrepreneurship here. And I’m glad that I made the right decision. Now, I’m simply living my dream!”

The two master’s students realised early on that language barriers cause problems in the medical care system. In the worst case, the problems may be life-threatening. They talked to doctors at the Emergency Department at Linköping University Hospital, who encouraged them to try to find a solution. They suggested that the important first meeting between healthcare personnel and the patient should be a particular focus.

This led to the idea to develop a digital tool for communication across language barriers. A tool that could improve interaction, help communicate instantly and reduce costs.

By chance, Naveen Sasidharan and Abhishek Jacob Chethikatt came into contact with LiU Holding, and the innovation advisers there helped them give their ideas a more concrete form and provided impetus in the right direction.

“Without them, we would never have reached where we are today,” says Abhishek Jacob Chethikatt.

A prototype was ready to test in 2017. The app – Helen – contains a large number of medical questions and answers in several languages. In addition to Swedish and English, the app can process Arabic, Somali and Dari (which is used in Afghanistan and other countries).

“These are languages spoken by large numbers of immigrants in Sweden, and there is a severe shortage of authorised interpreters here. We are also working with Tigrinya, which is used in Eritrea,” says Naveen Sasidharan.

The app is now being tested at five clinics in Östergötland: an emergency department, a gynaecology clinic, two local healthcare centres and one clinic in the Swedish dental service. The app has been tailored for use in each of these centres.

“We are in dialogue with doctors and other healthcare personnel who use the app. They find that it is useful in various situations. This is very exciting,” says Abhishek Jacob Chethikatt.

Worldish currently employs 12 people, several of them students who work part-time. They work with programming, marketing, translation and creating the relevant medical content. The company also has an advisory board, whose members include doctors.

The company is housed in the Lead company incubator in Mjärdevi Science Park, close to Linköping University. Here, Worldish and other start-ups obtain help in making the transition to successful commercial enterprise.

“We’ve received a great deal of support from Linköping University and the innovation office there,” says Naveen Sasidharan.

In 2017, Worldish was selected as a “rivstart” (hot-off-the-blocks) winner by Swedbank, a major Swedish bank. They received prize money of SEK 250,000 and access to a network of investors and tailored training programmes.

They hope to become established in Sweden, the other Nordic countries and Germany within five years, possibly also the US and Canada.

“For us it’s just fantastic to be involved with this and contribute to people gaining access to the medical help they need without delay,” says Abhishek Jacob Chethikatt.
HOCKEY STAR enjoys student life

She stood in goal for the Swiss ice hockey team at the Winter Olympics in South Korea – but her real place is goaltender for Linköping Hockey Club and student at Linköping University. Florence Schelling is one of the many international students who have chosen LiU for their advanced studies.
This summer, Florence Schelling, 29, will graduate from the master’s programme in Business Administration – Strategy and Management in International Organisations, at Linköping University. She started her studies in Linköping two years ago, thanks to an offer from Linköping Hockey Club.

“It was three years ago that they asked me if I wanted to come to Linköping to play hockey. I was attracted by their offer and was looking for new challenges, so I jumped at the chance. But I didn’t start studying immediately: that came a year later,” she tells us, and makes it clear how much she enjoys being at Linköping University.

“It’s a university town of exactly the right size – not too big and not too small. There’s loads to do here, and I’ve made lots of new friends, even though I haven’t been able to join in some of the international events since hockey takes up so much time.”

Florence Schelling was born and grew up in Switzerland, but chose to travel to Boston in the US for a bachelor’s degree in business administration. She spent five years there, before ending up in Linköping. Studying in Sweden was radically different from the experiences she had gained in the US.

“There are huge differences between studying in Sweden and in the US. Over there you live on campus and share accommodation with other students, while taking several courses at the same time. In Sweden, you take one course at a time. Each course lasts for a number of weeks, and when it’s over you start a new one. Relationships between students and teachers are also more relaxed in Sweden. In the US, contact with the teachers was restricted to office hours, but here you can send a text message asking for help at any time, and usually receive an answer immediately.”

Another noticeable difference is how students talk to the teachers.

“In Switzerland, for example, you would never call a professor by his or her first names, I’m certainly going to get some funny looks. The distance between students and teachers is much closer in Sweden,” she says.

Florence Schelling’s master’s project is a collaboration with Stanford University in the US, and Saab in Sweden. Stanford University gives a course called “ME310”, in which their students work together with students from other leading global universities to investigate design innovation challenges, posed by global corporations. For Florence Schelling this means ensuring that several collaborations all work smoothly at the same time, both with the group in Linköping, and with the group at Stanford. This can be a challenge, given the time difference between here and there.

“When we’re working on the project they’re asleep, and vice versa. But we’ve been able to solve this using late Skype calls. The commission we received from Saab was to come up with solutions for how to evacuate earthquake victims in difficult terrain, and make them safe. We are developing tents that differ from the ones currently on the market, and we’re developing ideas about how they can be transported to specific regions using, for example, drones,” she says.

DURING HER TIME in Linköping Florence Schelling has not only studied for her master’s: she has also become proud owner of a student overall, and been selected as Goaltender of the Year by the Swedish Women’s Hockey League (SDHL). Two years at Linköping University have given Florence Schelling many new experiences and expertise.

“This is a research-based university, and I have learnt not only to develop new knowledge based on other people’s research, but also to work together in a team in a way that was new to me. This is extremely valuable, not least when working on the final project.”

What will be her most enduring memory from LiU?

“I’m pretty sure that I’ll miss the Swedish fika tradition. To be honest, I’m not really a coffee drinker, but the fika holds such a strong position in Sweden. It’s not like this in Switzerland: there you start at 8 am, take lunch at 12, and then end work at 5 pm. I guess after three years here I’ve got used to taking a fika at any time,” she says with a smile.
Malmstens makes global design contacts in Milan

This spring, for the first time since 2013, Malmstens Linköping University was exhibiting at Milan Design Week. In an old monastery in the city centre, ten new pieces highlighted the students’ design and craft skills.

STORY & PHOTO JONATHAN PAKVIS

This event, and the enormous fair that is underway at the same time, are not to be missed, if you want to keep up with the latest trends in the design world. Hundreds of thousands of visitors from all over the world flock here, to be inspired, to mingle and to network.

Malmstens had some ten students and four staff members in Milan. A proud director of studies and department head Ulf Brunne presented the ten pieces on the podium. They were made by students in their final year, and are exquisite in their craftsmanship.

“This time we wanted to show fresh, new work. These are from the past six months.”

Most of the pieces were made by pairs of students from two different programmes. Several were also journeyman’s pieces.

“We’re probably the only university in the world to offer students the option of doing a journeyman’s piece.”

During his days in Milan, Ulf Brunne had meetings with reps from design schools in Chile and China. Malmstens is now looking to both the east and the west. Brunne had just returned from Cuba, where he hopes to sign an agreement with an art and design school. To the east, it is mainly about Japan, and in recent years, China.

“In Japan they’re extremely skilled, especially in furniture-making. We’ve had many exchange students from there over the years. China is a new track. There we had a large collaboration just last year, together with Swedish Wood, called “Design in Pine”, which has led to spin-offs.”

TOP The students from Malmstens exhibited their work in an old monastery.

BOTTOM For the exhibit, Malmstens chose ten newly produced pieces that demonstrate the students’ considerable craftsmanship.
Course took her to China

One of the electives in the master’s programme Science for Sustainable Development is a course entitled Research Skills in Environmental Science. This course lets students become acquainted with research, and prepares them for working with their thesis. It took Marianne Kropf to Guangzhou in China.

STORY ELISABET WAHRBY
PHOTO PIA MOLIN & MARIANNE KROPF

Just back in Sweden after the trip to China, Marianne Kropf shows photographs from the “Sponge City” project, which is the subject of her master’s thesis. Guangzhou is one of the ten cities in the world most affected by flooding, and participating in China’s country-wide “Sponge City” project, designed to manage stormwater in Chinese cities. Increasing the cities’ preparedness for extreme weather it involves flood control, water conservation and water quality improvement. The aim is to integrate the natural water cycle in the city’s infrastructure and have the flood water drained in a natural way, for instance with the use of wetlands or flood plains.

“I was trying to decide what to write my thesis on when I heard that the Department of Thematic Studies – Unit of Environmental Change had a research collaboration with Guangzhou. I became involved in this, and when a Chinese professor was visiting Linköping, we found a common ground in the research on the Sponge City program.”

This contact led to Marianne Kropf travelling to Guangzhou to interview decision makers, researchers and companies, and in this way obtain material for her thesis.

THE COURSE IN RESEARCH SKILLS gives a hands-on training with different types of skills that are commonly used in environmental research such as statistics, GIS, laboratory studies, questionnaires and interviews.

“It gave me ample opportunities to form a firm basis for my thesis work and the trip to China,” says Marianne Kropf. “I was able to use my time on location more efficiently, having prepared my interview guide so well during the research skills course. And it was useful to gain practical experience of the Sponge City project, seeing theory applied in real life.”

Several Chinese cities are working with projects to deal with extreme rainfall.
Hope for blind people

A simple retinal prosthesis is being developed in collaboration between Tel Aviv University in Israel and Linköping University. Fabricated using cheap and widely-available organic pigments used in printing inks and cosmetics, it consists of tiny pixels like a digital camera sensor on a nanometric scale. Researchers hope that it can restore sight to blind people.

Researchers led by Eric Glowacki, principal investigator of the organic nanocrystals subgroup in the Laboratory of Organic Electronics, Linköping University, have developed a tiny, simple photoactive film that converts light impulses into electrical signals. These signals in turn stimulate nerve cells.

The research group has chosen to focus on a particularly pressing application, artificial retinas that may in the future restore sight to blind people. The Swedish team, specialising in nanomaterials and electronic devices, worked together with researchers in Israel, Italy and Austria to optimise the technology.

The results have recently been published in the prestigious scientific journal *Advanced Materials*.

Unnecessary surgery for back pain

Millions of people all over the world receive the wrong treatment for low back pain, according to a recently published international study. This global study, published in *The Lancet*, concludes that many treatments harm more than they heal, and are unnecessarily expensive for the medical care system.

The research group has chosen to focus on a particularly pressing application, artificial retinas that may in the future restore sight to blind people. The Swedish team, specialising in nanomaterials and electronic devices, worked together with researchers in Israel, Italy and Austria to optimise the technology.

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Capturing brain signals with soft electronics

Klas Tybrandt, research fellow at the Laboratory of Organic Electronics, has developed new technology for long-term stable neural recording. It is based on a novel elastic material composite, which is biocompatible and retains high electrical conductivity even when stretched to double its original length.

The result has been achieved in collaboration with colleagues in Zürich and New York. The breakthrough, which is crucial for many applications in biomedical engineering, is described in an article published in the prestigious scientific journal *Advanced Materials*.

The coupling between electronic components and nerve cells is crucial not only to collect information about cell signalling, but also to diagnose and treat neurological disorders and diseases, such as epilepsy.
Deeper understanding of species roles in ecosystems

A species’ traits define the role it plays in the ecosystem in which it lives, according to a study by researchers at Linköping University.

In the autumn of 2016 a huge experiment challenged Einstein’s ideas about how the world works on the scale of quantum mechanics. The results have now been published.

In the Big Bell Test, 13 similar physics experiments were carried out at 12 locations around the world with data from over 100,000 participants. LiU researchers Jan-Åke Larsson and Guilherme Xavier are co-authors of the article about the project published in Nature.

The fundamental question that the experiments were designed to answer was whether photons can communicate with each other across long distances, at speeds greater than the speed of light. Some experimental results, including results from a research group of which LiU’s Professor Jan-Åke Larsson was a member, suggest the existence of what Albert Einstein called “spooky action at a distance”. At the very instant that the polarisation of one photon of an entangled pair of photons is measured, it appears that the other photon adopts the opposite polarisation, even if the two are separated by many kilometres.

The 106 authors of the article in Nature conclude that the results are highly incompatible with local realism. This research may at first sight appear to be solely philosophical, but it does have applications in information security, the interface between quantum physics and telecommunications.

The article is titled “A mammalian blood odor component serves as an approach-avoidance cue across phylum border – from flies to humans”.

An article co-authored by (among others) LiU researchers Matthias Laska, Matilda Norberg and Christian Lahger has received considerable attention on the online journal Scientific Reports (Nature). It was one of 2017’s most read articles – number 40 of a total of 24,000 published during that year.

Huge impact for LiU researchers

In the recent study, the researchers have focused on marine ecosystems, such as coral reefs, fjords and the open sea.

These marine systems contain several habitats of great ecological and economic importance. The scientific analysis of these habitats is, however, complicated because of the number and variety of species that call them home.

One method to deal with this complexity is to describe the system as a food web, where the nodes represent the different species and the links correspond to interactions between them. An interaction may be, for example, that one species feeds on another, that an insect pollinates certain plants, or that a parasite attacks certain hosts.

“Research on ecological networks has focused on how direct interactions like predation are controlled by species traits such as body size. We have taken this idea one step further and looked at how the ecological role of a species, or in other words its pattern of direct and indirect interactions, is controlled by its traits,” says Anna Eklöf, senior lecturer and leader of the study.

A new theoretical ecology study, published in the scientific journal Ecology Letters, focuses on marine ecosystems, such as coral reefs, fjords and the open sea.

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The patient’s condition is improving, but there is a serious risk of relapse. This is a pretty accurate description of the current condition of the Baltic Sea. Nutrient load has been considerably reduced since the 1990s, but is expected to increase as a consequence of global warming – if nothing is done.
Karin Tonderski, docent in ecology, believes firmly in local commitment, and has seen many examples of it in her research. She has worked together with colleagues at Linköping University and ten other partners from five countries in a recently concluded research project, BONUS Miracle, financed by the countries around the Baltic Sea and the EU’s Seventh Framework Programme.

The project was one of several intended not only to create scenarios for how the Baltic Sea and its catchment basins will be affected by global warming, but also to investigate measures we can take to continue the decrease in nutrient load.

Karin Tonderski and her colleagues examined four regions experiencing problems with both eutrophication and flooding – the Helge in Sweden, Reda in Poland, Selke in Germany and Berze in Latvia. They wanted to see how the energy of local initiatives can be harnessed.

Two of the LIU researchers – Tina Neset and Carlo Navarra – developed a visualisation tool that can both support local participation and simplify dialogue with decision makers in the EU and other bodies. The researchers also used an economic analysis tool that takes into consideration the possibility that a measure to reduce the emission of nutrients often gives rise to ecosystem services. Wetlands that are created to reduce the emission of nutrients may, for example, lead to a rich bird life, function as irrigation ponds, and provide opportunities for recreation.

“These two tools were useful to provide reliable background information on which to base a dialogue in areas where problems with eutrophication and flooding have created conflict. We have been able to visualise and display the consequences of various solutions, and show which measures provide benefits in the form of, for example, improved angling opportunities and cleaner bathing and drinking water. A measure that initially appears to be expensive, measured as cost per kilo of nitrogen separated, may turn out to be cheap when other values are included in the calculation,” says Karin Tonderski.

The problems that residents felt most engagement over, such as the brown colouration of the water in the Helge River, and the biodiversity and ecological status of the watercourse in the Selke River, led to more people getting involved. The researchers received more ideas to add to the simulations and determine the effects of.

The project involved a common learning process for researchers, residents and government agencies, and the results show that we have ample opportunities to influence developments.

One important part of the puzzle is that it must be possible to pay for measures in one sector from another, an example of which concerns the Reda in Poland. In this case, the costs and feasibility of creating reservoirs in the agricultural land upstream in order to protect the urban areas downstream from flooding are being investigated. This may turn out to be cheaper than building embankments around the urban areas.

New descriptions of areas of responsibility for people employed at government agencies are also required.

“A person who is working with water-based issues at the Swedish Board of Agriculture must be in contact with people in other sectors who are also working with questions that influence the water environment. We can’t carry on working in sealed compartments,” says Karin Tonderski.

Often, it is not a lack of money that limits activity.

“Money is available in the system, but sometimes the different strategies and policy instruments counteract each other. We must save the Baltic Sea and ensure at the same time that people have food and jobs. A clear focus on ecosystem services may be one way to create a higher degree of consensus. We have also seen how local economic resources become available when objectives that create commitment are in focus. The EU Water Directive is infused with a spirit of local participation, the farmers are experts, we should give them power and the opportunity to contribute,” Karin Tonderski concludes.

The load of nutrients in the Baltic Sea is significantly lower today than it was 20 years ago.
Your diagnosis may depend on where you’re from

STORY THERESE EKSTRAND AMAYA PHOTO PIA MOLIN

Ethnicity researcher Anna Bredström has spent hours poring over the 1000 pages of DSM-5, the Diagnostic and Statistical Manual of Mental Disorders, investigating how the manual treats culture and ethnicity. She suggests that the manual is blind to the fact that the western world also has a culture, and that this may lead to different patients being assessed by different criteria.

It’s not easy to see from outside whether Anna Bredström is in her office or not. The glass wall that separates her office from the corridor is covered by photos that prevent anyone seeing in. This attempt at a shielded environment is where she has read a 1000-page manual for mental disease in great detail.

Anna Bredström has been occupied for many years with the most recent version of DSM, the Diagnostic and Statistical Manual of Mental Disorders, used all over the world in the diagnosis of mental disease. If you visit a psychiatrist in the US, your symptoms will be classified according to the DSM. Sweden uses the WHO codes for statistics and follow up, but in clinical psychiatry the DSM is principally used, since it gives a more detailed description of each diagnosis.

A new version of the manual was issued in 2013, after 10 years’ work by hundreds of international experts. The publisher at the time stated that it had been an intention to give the manual what was called “higher cultural sensitivity”. The previous version, DSM-IV, had been criticised for “exotifying” certain diagnoses. For an ethnicity researcher this, was, of course, extremely interesting, and Bredström wanted to see how the new version differed from the previous one.

“This is one of the most important documents for how we are to understand these diagnoses, and how we can compare the way in which different diseases present themselves in different countries. I just couldn’t resist taking a look,” she says.

She emerges from her bookish scholarly space and walks along the corridor to the coffee room.

THE SIGNIFICANCE OF SOCIAL AND CULTURAL context for a certain condition is an issue that is hotly debated within psychiatry. Bred-
ström’s research has shown that the manual is inconsistent in the significance it gives to the surroundings and context when determining a diagnosis. Since it’s not possible to take a blood sample to determine the mental health of a patient, a certain amount of context for the symptoms is necessary, in order to understand why a patient has these symptoms.

“The DSM gives greater significance to the context for certain patients – those who were not born in the western world. This may mean that someone from Latin America who visits a psychiatrist in the US will be assessed on different grounds than an American person, born in the US,” says Bredström.

AT FIRST SIGHT, YOU MAY EXPECT THAT depression and other forms of mental ill-health show the same symptoms all over the world. But that’s not the case. Some of the symptoms we demonstrate are specific to the culture in which we grew up. A panic attack, for example, can be expressed in different ways. Patients in Sweden often describe how a panic attack manifests itself as chest pain and breathing difficulty, while for patients in other parts of the world it may also involve tinnitus, headache and uncontrolled screaming.

“The manual describes the symptoms that the western world experiences as the ‘correct’ symptoms of a panic attack. The symptoms that other cultures experience are described in a separate paragraph further down, and are called ‘culture-specific symptoms’. The manual ignores the fact that also patients in the western world live in a cultural context,” says Bredström.

PSYCHIATRY IN RECENT YEARS has placed increasing emphasis on studying people’s thoughts, feelings and behaviour based on a perspective in which biological mechanisms and activity in the brain are central aspects.

When it was decided to revise the DSM, the publishers decided that this way of looking at things would be more prominent.

“But how can this more biological way of looking at things be united with the idea that culture influences us? The manual takes what is known as a rather biopsychiatric line, apart from when it comes to ethnicity.”

Anna Bredström believes that ethnicity will become a dividing line within psychiatry – and for the patients.

“The publishers have considered the criticism and made some improvements. But the manual still clearly takes the western world as the norm and assumes that ‘everywhere else has a culture, but not us’. This leads to the risk that patients are not assessed by the same criteria.”
Meeting LiU abroad

Over the past year, LiU alumni have met up in several locations around the world. Most recently, alumni get-togethers have been arranged in Seoul, Beijing, Shanghai and Singapore.

These meetings are an opportunity for Linköping University to keep in touch with its alumni. The alumni get to meet others who have studied at LiU and hear the latest university news.

Some 40 people signed up for the alumni get-togethers in Beijing and Shanghai in April, most of them former exchange students. They heard a presentation from The Swedish Young Professionals in China, the youth committee of the Swedish Chamber of Commerce in China. There was also an alumni dinner in Korea in April, again with mostly former exchange students among the attendees.

Another alumni get-together took place in Singapore in March. Several employees from Linköping University had travelled to Singapore for an international education conference and took the opportunity to connect with over 20 LiU alumni during dinner.

In January, Linköping startups Spotscale and Amra, amongst others, visited Palo Alto in California together with representatives of Linköping University, Science Park Mjärdevi and Linköping Municipality. An alumni get-together was organised at the Nordic Innovation House.

International alumni get-togethers have also taken place in Brussels, Jakarta, and London during the autumn.

Do you want to know more?

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Alumni world

ABDUL LATTIF ADAM is assistant operations manager at Port Futures Ghana. At Linköping University (LiU), he studied for a master’s in international and european relations, and graduated in 2008.

SYED ZEESHAM FAHEEM is senior manager in materials management at Aga Khan University Hospital in Karachi, Pakistan. At LiU, he studied for a master’s in manufacturing management, and graduated in 2007.

EDNA FERRO is project manager at General Electric in Mexico. At LiU, she studied for a master’s in manufacturing management, and graduated in 2003.

ANDREAS LAURINGER is program manager at Magna International in Austria. At LiU, he studied for a master’s in manufacturing management, and graduated in 2009.

SWADHIN K MANGARAJ works as a consultant at Cap Gemini India. At LiU, he studied for a master’s in computer science, and graduated in 2013.

SAMEER MOHYUDDIN is technical training consultant at Adobe in England. At LiU, he studied for a master’s in community and interactivity, and graduated in 2005.

JONAS NYASALU is technical supervisor for Automated Transfer Systems at the Reserve Bank of Malawi. At LiU, he studied for a master’s in computer science, and graduated in 2010.

MOHSIN RAZA completed a PhD in materials science in March 2017 at University of Mons in Belgium. Now he has been hired as postdoc at Linköping University for a 2 year period. As a master’s student at LiU he studied materials physics and nanotechnology, and graduated in 2012.

STEFAN SCHOLZ is advisor on international disaster risk reduction at German Red Cross. At LiU, he studied for a master's in international and european relations, and graduated in 2014.

TSUNG-HAN WU is senior field process engineer at Lam Research in Taiwan. At LiU, he studied for a master’s in materials physics and nanotechnology, and graduated in 2014.
Fredrik C Johansson has lived in many countries. He is now deputy country manager for IKEA in South Korea.

Senior executive at IKEA in South Korea

LiU alumnus Fredrik C Johansson is deputy country manager for IKEA in South Korea. Since the mid 1990s he has worked for IKEA around the world, including in France, China and Austria.

In the early 1990s he graduated from Industrial Engineering and Management, an engineering programme at Linköping University.

“More than anything it taught me analytical thinking, and an understanding for both engineering and economy.”

Fredrik recently spoke at an event the Swedish embassy in Seoul organised for local students who will be studying a master’s degree at Linköping University.

“I talked about why I chose LiU and a bit about my time there. In addition to my studies I was involved in Radio Ryd and AIESEC, and I socialised a lot with exchange students. Also I went on student exchanges to Germany and South Korea.”

After graduation, Fredrik began at IKEA as a trainee. He moved to Hong Kong to work with purchasing in Asia. Next he managed a factory in Slovakia, was made division manager and then global supply chain manager for part of IKEA. After seven years in Vienna he moved to Shanghai where he continued in the same global role for a few years.

“In 2010 I started working in retail, that is, with the stores. I spent a few years in Shanghai and Beijing before transferring to Paris, where I was deputy country manager for three years. In September 2017 we came to Seoul.”

In South Korea, IKEA is under construction.

“We have to help people improve their home lives, whoever they are.”

Even if he hasn’t lived in Sweden since the mid 1990s, he feels that in South Korea people expect you to make decisions and take action more quickly than in Sweden.

“Everything has to be done fast!”

Living in a country where you don’t speak the language leads to other challenges.

“But with a little imagination and patience you can always solve those things. I find living in different cultures really fascinating, as I’m constantly learning things – even when I’m not at work.”

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Meet international alumni from Linköping University.

LiU alumni around the globe

Md.Fazla Mohiuddin
PLACE OF RESIDENCE: Dhaka, Bangladesh
FAMILY: Divorced
NATIONALITY: Bangladeshi
WORK: Lecturer, BRAC University
CURRENT WORKING ACTIVITIES: Preparing and delivering lectures to undergraduate students, conducting research.
BEST THING ABOUT YOUR JOB: I have to study a lot to keep me updated about current knowledge within the field of business and economics. All my life I had to pay (in the form of tuition) for my education. However, this is the first time I am getting paid for studying. How exciting is that!
HOBBIES: Playing Sudoku, travelling and hanging out with friends
EDUCATION AT LIU: MSc in Business Administration (SMIO)
MOST MEMORABLE LIU EXPERIENCE: We had a course on leadership development where we went deep into the forest to learn about teamwork and leadership through activities (i.e. scavenger hunt). It was a great experience for me as I never participated in such activities before. We built a raft out of water drums in order to cross a river. Although we could not win, it was great fun for me to work with other members of the teams. The most thrilling moment was that we almost sunk the raft in the middle of the canal. At the end we were safe and got to the shore though.

Cherif Abdul Majid Khyarhoum
PLACE OF RESIDENCE: Nouakchott, Mauritania
FAMILY: Married with 5 children
NATIONALITY: Mauritanian
WORK: Assistant professor at the University of Nouakchott
CURRENT WORKING ACTIVITIES: Established a company called Mauritania Business Consultant. This company provides services to foreign investors and exporters to get in touch with Mauritanian businessmen who are looking for foreign partners. The company also offers fishing licenses, gold licenses, fish export, etc.
BEST THING ABOUT YOUR JOB: Best thing about my teaching job is introducing new learning techniques through learning by doing as well as using the social media in language learning.
HOBBIES: Getting in touch with new people, travelling, teaching English as a foreign language.
EDUCATION AT LIU: Intercontinental Masters in Adult Learning and Global Change
MOST MEMORABLE LIU EXPERIENCE: The most memorable LiU experience that makes me miss the University and Sweden is the friendly environment and taking a cake and coffee (fika).
Ambarish Karunanithi

PLACE OF RESIDENCE: New Delhi, India
FAMILY: Married
NATIONALITY: Indian
WORK: Senior Research Associate at the Centre for Policy Research (Public Policy Think Tank), New Delhi, India
CURRENT WORKING ACTIVITIES: Developing an institutional framework and partnership model to link the government with stakeholders (commercial as well as academic actors) in order to strengthen the drinking water and sanitation service delivery mechanism in urban and rural areas.
BEST THING ABOUT YOUR JOB: My subject area means that I get to work on an amazingly broad range of topics – everything from global and Indian urban development strategy to drinking water crisis to the potential role of sanitation in public health and society. I have a pretty direct line in assisting the Indian federal government in policy making in the water and sanitation sector.
HOBBIES: Photography

EDUCATION AT LIU: M.Sc in Energy and Environmental Engineering
MOST MEMORABLE LIU EXPERIENCE: LiU provided me a strong platform to understand and analyse the linkage between urban development and related environmental impacts and strategies to develop innovative approaches to mitigate such impacts. LiU was like a new world to me where I have made an unbreakable bond with people from different nationals, especially my friends Mike from Sweden (currently working as supply chain executive in a firm at Västerås), Adrian from Romania (currently working as Team Lead in Xylem in Stockholm), Vesselin from Bulgaria (currently working as LCA expert in a firm at Norway), Fillipo from Italy (professional photographer), Sancho from Colombia (professor, Los Andres University, Bogota) and Suren from India (pursuing doctoral studies at Vrije University, Brussels). To date, I am speaking to all of them very frequently and also share my work and also get opinions and suggestions from them to improve my research. Thanks to LiU for providing me such a wonderful opportunity.

Habib-ur-Rahman Baig

PLACE OF RESIDENCE: Lahore, Pakistan
FAMILY: Married
NATIONALITY: Pakistani
WORK: Running a publication house
CURRENT WORKING ACTIVITIES: I am the founder and chief executive officer of Habib Publication Limited where I publish books of different authors. I am also running a web portal www.pakvisit.com where I am working as Chief Executive Officer. Pakvisit.com was founded by my brothers and me in January 2002 but today we have a team of 23 people living in United Arab Emirates, Malaysia, Canada and Pakistan. My third job is student consultancy. I am working as a senior consultant at Makro Consultants Ltd Lahore where we help people in choosing right universities and courses abroad.
BEST THING ABOUT YOUR JOB: I enjoy every single moment of my work. As a web portal we connect buyers will sellers, doctors with patients, job seekers with companies, singles with their life partners and tourists with attractive destinations of Pakistan.
HOBBIES: Travelling, surfing on internet, watching movies and writing.
EDUCATION AT LIU: MSc Business Administration
MOST MEMORABLE LIU EXPERIENCE: Every moment of my life in LiU was extraordinary. When I look back in 2006 I miss those unforgettable moments. I miss my flat on Rydsvägen, Linköping where I used to cook Pakistani foods by calling my mom back in Pakistan. I used to enjoy the learning methods of great teachers of Linköping University, such as Marie Bengtsson, Peter Gustavsson and Jörgen Ljung. These teachers’ unique ways of teaching fostered my passion for learning.
The world never stops moving.
We’re moving with it.