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THE BRAIN IS YOU. That simple and that complex. Your brain has all your memories, governs your movements and senses. Your joy, your anger, and your love are in your brain. At Uppsala University brain research is of great importance and is making rapid advances. It’s no longer a matter of fantasies and dreams, no longer alien or frightening like Frankenstein’s monster.

In our choice of paper our vision of a better world takes on practical meaning. By choosing to use this paper we have reduced our climate impact by approximately 35%. The paper is produced in Sweden and the amount of water used in its production is uniquely low. The forest raw materials come from “FSC forests.”

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New Horizons presents only a fraction of what we do. There’s no way we can present everything in 40 pages. We still hope to enhance your knowledge of the most important university in the Nordic countries and, in many fields, one of the most important in the world.

In this issue of New Horizons we want to give you a glimpse of the work being done by researchers here at Uppsala University surrounding our most complex organ. We hope to stimulate your own gray cells. At the same time we tell you about efforts in research and education in some other fields at the University. After all, full-throttle activities have been underway year round for 533 years here. But we’ve never been so good as we are today. Never has Uppsala University research been more important. That’s how it is with universities. We evolve, learn, and improve – constantly.

The copy of New Horizons you have in your hand presents only a fraction of what we do. There’s no way we can present everything in 40 pages. We still hope to enhance your knowledge of the most important university in the Nordic countries and, in many fields, one of the most important in the world.
The brain’s paparazzi

Like paparazzi they weasel their way in and take intimate pictures of what is happening in our most private world – our brain. The images relate how our brain cells work and where in the brain we think various thoughts. But what we’re thinking – no one can see. At least not yet.

BRAIN RESEARCH is taking rapid strides. With the aid of a magnetic camera (MR), researchers can see further and further in brain cells work and where in the brain we think various thoughts. But what happening in our most private world – our brain. The images relate how our

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We can’t say what a thought is but we can see traces of thoughts when various parts of the brain communicate with each other.

– The combination of MR and PET is extremely exciting and will take us further along the path to understand how the brain works and how we can slow down, alleviate and hopefully also cure disorders like depression, dementia, and brain tumours, says Elna-Marie Larsson, professor of neuroradiology and chief physician at University Hospital in Uppsala.

PHOTO: STAFFAN CLAESON

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– An MR/PET camera would take us to the absolute cutting edge of brain research, says Elna-Marie Larsson.

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With the aid of a magnetic camera (MR) and positron emission tomography (PET), which can be used to study metabolism, this opens new vistas for brain research. – The combination of MR and PET is extremely exciting and will take us further along the path to understand how the brain works and how we can slow down, alleviate and hopefully also cure disorders like depression, dementia, and brain tumours, says Elna-Marie Larsson, professor of neuroradiology and chief physician at University Hospital in Uppsala.

– First of all, we can see what the brain looks like and how it behaves by studying its anatomy, blood flow, and nerve-cell activity. This helps us to distinguish between what’s pathological and what’s healthy and also tells us exactly where the pathology is located, so we can treat the patient with medicines or surgery. What’s more, we can study where in the brain various functions are localised.

– We can’t say what a thought is, but we can see traces of thoughts when various parts of the brain communicate with each other, says Elna-Marie Larsson.

Today it’s popular to speak of the power of thought and participating in the healing process. As a brain researcher, do you believe in the healing power of thought?

– Yes, I have to say I do. There are studies that show that you can learn to think in a certain way to moderate how you experience pain.

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Examinations that do no harm

Elna-Marie Larsson’s speciality is to see, understand, and interpret what various brain disorders look like in the complex images produced by the magnetic camera. The great advantage is that it is based on magnetism and not radiation. Researchers can perform repeated examinations and run comparative studies on healthy individuals. PET, on the other hand, requires injections of radioactive markers to enable the tracking of where antibodies go, for instance. This is something that can’t be done as yet with magnetic cameras, so the idea is to use both methods at the same time. But what impact will this have on how patients are treated in practice?

– For one thing, it makes it possible to provide more individually tailored treatment, where you can directly see whether the medicines being used have the desired effect, says Elna-Marie Larsson.

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With a magnetic camera you don’t have to expose patients to radiation, but how are we affected by magnetic fields that are tens of thousands of times stronger than that of the earth?

– Thus far no one has been able to show any negative effects, although subjects may feel slightly dizzy if they are placed too quickly in cameras with extremely strong magnetic fields. But these are not used in routine examinations.

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Elna-Marie Larsson has been doing research using MR technology ever since it was introduced in the early 1980s.

– I’d just become a radiologist and thought all this was so very difficult, something I would never pursue. How wrong I was!
PETER AND PATRIK JUSLIN: TWO BROTHERS – TWO HALVES OF THE BRAIN

Illogical decisions work just as well

The theory of the super rational Homo economicus serves as a basis for much of our social planning. But psychology researchers, like Peter Juslin, question just how relevant this theory really is and claim that this emotionally cold and rational character has a lot to learn – from Homo sapiens.

TEXT ANNETTE WALLQUIST  PHOTO STAFFAN CLAESSON

THEORIES about Homo economicus have been generally accepted by economists since the 19th century. They assume that people think rationally and always act in their own best interest. The theory has long been used as a way of understanding and predicting social and economic processes. This is partly why we believe in market forces.

– Economists often reason indirectly as if it were a natural law for it to work that way, and the theory is also found in other social sciences. But research shows that we should be sceptical about that conclusion, says Peter Juslin, who is a professor of cognitive psychology.

Problems with logic

It turns out that Homo sapiens does not think as rationally as the theories behind Homo economicus maintain. On the contrary, we have a hard time taking and weighing information so logically and methodically as Homo economicus assumes.

What’s more, we want to have justice and are more generous than the theoretical and rigid Homo economicus.

Peter Juslin therefore maintains that our way of thinking and making decisions should rather be seen as something that is culturally acquired that rests on social norms and regulations within the group we belong to. For example, it turns out that economy students who read about Homo economicus grow into that culture and personally become more and more like the human beings in economic theory.

Over the years theories about decision-making processes have vacillated between the assumption that humans are rational and look to their own best interests and that they lack the capacity and knowledge to make rational decisions. Psychology researchers at Uppsala use an ecological perspective in their research, meaning that the decision-making process is studied in relation to humans in their natural environment. And Uppsala researchers have found that Homo sapiens behave considerably more rational than research about decisions has maintained in the past.

– People’s thought processes are often simple and can lead to illogical decisions, but they nonetheless work out all right in the end, says Peter Juslin.

Attitudes to risk

Uppsala scientists also study people’s attitudes to risk and uncertainty. While Homo economicus unerringly chooses the alternative that seems best in the long run, Homo sapiens tries to do everything to avoid risks.

– People are more afraid of not knowing how things will turn out and are thus likely to take risks, explains Peter Juslin.

In simulations of the consequences of the risk behaviour of the two types it has been shown that the timid and security-seeking Homo Sapiens tries to do everything to avoid risks.

– One factor is sudden sounds that can prompt physiological reactions.

Together with his research associates he has developed a theory in which he posits several psychological mechanisms that explain the sensations music awakens. What they all have in common is that it is not the music as such that awakens the feelings but rather the information the music conveys.

– One factor is sudden sounds that can trigger emotions. There’s a famous tymbra stroke in a symphony by Haydn that conveys a trick that is often used in films.

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With music on the brain

Music impacts us directly and awakens feelings. But how and why that happens is a mystery. Psychology Professor Patrik Juslin has devoted his professional life to finding the answer to that riddle.

– We react strongly to certain music but don’t know why. But in this case the listener has created an association to the music in the past that he or she is not entirely aware of, according to Patrik Juslin.

Music can also create a so-called emotional contagion. The emotional expression of music can trigger the same emotion in the listener. Slow music with deep tones can make us sorrowful, while faster music with high tones can make us happy. This is a trick that is often used in films.

Music can also stimulate episodic memories, that is, certain music is strongly associated with an event.

– A classic example of an episodic memory is when people say “Honey, they’re playing our song,” says Patrik Juslin.

Music and health

One social field that is coming on strong is music and health, according to Patrik Juslin. For instance, it has been shown that the right sort of music can lead to long-term favourable effects in fighting against stress and depression.

– One field that is making great headway is music and health, says Patrik Juslin, professor of psychology. For instance, it has been shown that the right sort of music can lead to long-term favourable effects in fighting against stress and depression.

– One factor is rhythmic adaptation. This could help to explain why some people like to listen to techno music or marches. In that kind of music there’s a clear pulse, which provides the listener with positive feedback from the body and affects our emotional state.

– There are many advantages, if it’s used properly. It’s cheaper than medicines, has no side effects, and can easily be custom-tailored to a particular individual, Patrik Juslin points out.
Long-term drug abuse can seriously damage the central function of the brain. Now behavioural scientists at Uppsala are testing methods to rehabilitate perception, memory, and cognitive ability.

**What's more, we have gone on to attempt to rehabilitate perception, memory, and cognitive ability, three of the central functions of the brain that are damaged by long-term abuse.**

**New methods needed**

From a public health perspective it should be equally urgent to rehabilitate the brain and its capacity, but that requires alternative methods that do not impede the generation of new nerve cells, says Fred Nyberg, professor of biological addiction research at Uppsala University.

In autumn 2009 Fred Nyberg and two colleagues won a six-year grant from the Swedish Council for Working Life and Social Research to explore the effects of various medical treatments. A year later the team has localised and manipulated an endogenous peptide that mitigates pain and counteracts abstinence. Animal experiments show a reduced propensity to ingest more alcohol or drugs.

– What's more, we have gone on to attempt to rehabilitate perception, memory, and cognitive ability, three of the central functions of the brain that are damaged by long-term abuse. Right now we're pursuing a theory about how we could accelerate the generation of new nerve cells, says Fred Nyberg.

**Mirror of the soul**

**CEREBROSPINAL FLUID, liquor, or the mirror of the soul.** The things we love go by many names, and for Professor Jonas Bergquist this fluid is truly a favourite. With the help of images and gestures he explains how you can go about taking a sample of this fluid – a needle is inserted between two vertebrae in the base of the spine.

– We are studying proteins in the fluid, and we refer to the result of the sampling as a chemical fingerprint. By comparing the fluid from a healthy person with someone who evinces symptoms of a disease, we can distinguish differences that indicate imbalances and possible problems.

Knowing what is normal

A single sample, taken from between the fourth and fifth vertebrae in the base of the spine, provides researchers with information about which nutrients are no longer nourishing the brain, or which waste products are no longer leaving it.

– An important task is to get collaboration with US researchers, Jonas Bergquist knows what a sample from a healthy person looks like, and this makes it possible to make comparisons.

**Biologists, clinicians, chemists. Our research is a bridge between us.** It's also why I wanted this job. It's optimistic and curious. What keeps me going is that I want to continue to learn and continue to examine humans in order to help create a better world.

Jonas Bergquist is enthusiastic about his research and the advances they are making at the Division of Analytical Chemistry. But he and his colleagues are not alone in being enthusiastic: many people are eagerly looking forward to finding out from Professor Jonas Bergquist's mission at the University, and also part of the challenge.

– An important task is to get collaborative associates to grasp the limitations to our work. Another is to move forward together and exploit analytical tools to the utmost.
RESEARCHERS at the Department of Psychology at Uppsala University have several years’ experience of studying what fear and social phobia “look like” in the brain, with the aid of PET technology, which measures activity in the brain. It is primarily the amygdala and the temporal lobe that are activated in anxiety attacks and are calmed down by treatment. Comparisons between treatment with cognitive behavioural therapy and drugs show that the similarities are greater than the differences.

**Genes govern the effect**
When a drug company showed its interest, the researchers took part in a clinical test of treatment with cognitive behavioural therapy and drugs. It’s extremely important to learn more about the underlying factors open the possibility of developing new forms of treatment.

In a new study researchers at Uppsala University presented the surprising finding that the normal and the abnormal in psychiatry. The capacity to regulate feelings and behaviour grows as the function in the brain’s frontal lobes develops. But children’s ability to control themselves depends on the environment.

**EXCESSIVE ITCHING is highly unpleasant and difficult to treat.** Drug companies often go on to try to find more precisely which areas of the amygdala are affected equally by placebo and drugs.

– For drug companies, the discovery that placebo affects the brain can be a problem. They have to be able to show the effect of a drug compared with placebo. But of course it’s extremely important to learn more about why placebo works and to apply that knowledge in treatments, says Tomas Furmark.

The study was the first to show the path from genes via the brain to behaviour during treatment. There is a great deal of international interest in the research, as few have followed the effect in the brain during the entire treatment in this way. The researchers are now going on to try to see more precisely which areas of the amygdala are affected equally by placebo and drugs.

– The brain develops toward being more thought controlled from having been controlled by feelings. All behaviour must be seen in a developmental perspective.

**Burn pain and itching governed by the same nerve cells**

EXCESSIVE ITCHING is highly unpleasant and difficult to treat. It’s a common complication after operations and burns. The mechanisms behind itching are not fully understood, but enhanced knowledge about the underlying factors opens the possibility of developing new forms of treatment.

In a new study researchers at Uppsala University presented the surprising finding that the same nerve cells that are active in pain from burns are also associated with itching. In the study, which was performed on mice, the research team under the direction of Professor Klas Kullander at the Department of Neuroscience examined the nerve cells that transmit signals in burning pain. When the gene that governs these nerve cells had lost its capacity to send signals, the mice reacted, as expected, less to heat, but the surprising thing was that they also started to scratch themselves continuously.

– In the long run we will hopefully be able to elucidate which nerve fibres conduct the itching, which would mean that we could eliminate the itch right at its source, says Klas Kullander.

The brain develops toward being more thought controlled from having been controlled by feelings. All behaviour must be seen in a developmental perspective.

**Image of brain reveals effect of sugar pills**

Using PET-technology Uppsala scientists have discovered that placebo can yield an effect in the brain similar to that of treating anxiety with drugs or cognitive behavioural therapy. But only in people with a specific risk gene.

**Morbidity normal**

A three-year-old is lying next to the candy rack in the shop and crying. The child wants candy.

The paper argues that it’s not Saturday has no impact. He has to carry the child off, a perfectly normal event. But if the child is 15 years old and behaves in the same way, the child’s behaviour is clearly deviant.

**Diagnosis helps children**

Without knowledge about children’s under-lying difficulties it’s easy to perceive them as simply disruptive and to yell at them. The ADHD diagnosis, for example, has enabled research that has helped us understand that the brain functions in these children are different. This knowledge can be used to help children – attitudes can change and specific treatments can be developed. For instance, children with ADHD need more encouragement than other children, as the reward system in their brain works less well. They are simply not as good at rewarding themselves.

We need knowledge to be able to help them as early as possible.

**Heredity can affect children’s propensity to expose themselves to danger**

Hyperactive and impulsive children can seek out bad environments. Their lack of impulse control entails that they expose themselves to danger, since they don’t reflect and let their reason guide them, explains Mia Ramklint.

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Brain cells in new light

Fibre optic light in combination with new synthetic and fluorescent proteins opens unimagined vistas for studying the brain at a more detailed level. Now researchers at Uppsala University are trying to find out how brain cells communicate with each other.

TEXT ANNETTE WALLQVIST
PHOTO STAFFAN CLAESSON

UNTIL NOW BRAIN RESEARCHERS have had to choose between studying functions in whole groups of cells in the brain or the function of individual cells – but could not get the whole picture at once. With this new technology it will be possible to do both, says Richardson Leao, who is a researcher in neuroscience and director of a project geared to understanding the communication of brain cells.

He likens it to the buzz of a large crowd. Previously it has been possible to listen either to the buzz or to one of the conversations going on under the buzz. With the new technology it is possible to listen both to the buzz and to all of the unique conversations in the brain that are underway simultaneously. This helps us understand why it sounds the way it does.

Luminous proteins

The key to this new research lies in synthetic and fluorescent proteins. By inserting these in select brain cells, neurons, in mice and then illuminating them with fibre optic light, it’s possible both to control the neurons and monitor their activity in various types of impulses.

– The protein shows what the neuron is doing by changing the light in the cells so that they blink when they are activated, says Richardson Leao.

He explains that the brain consists of billions of neurons that are constantly doing different things and moreover have different properties.

– To understand how the brain works and what makes it react as it does, it’s also necessary to understand how brain cells communicate with each other.

The new technology enables scientists to take part in a kind of scientific whispering game:

– We simply send information to a group of neurons and monitor it in another group and then look at how the information was transmitted between them, says Richardson Leao.

Earlier theories devised to describe the communication of neurons have been based on computer science:

– But the brain is not a computer. That’s why we bring together various disciplines, like mathematics, biology, and physics, explains Richardson Leao.

The new technology opens up new potential to force selected neurons to be activated. By inserting a protein into a cell with a certain property, researchers can use light to force cells with the selected property to react.

– You can provoke reactions in specific groups of cells with specific characteristics. In the past you could only cause reactions with the aid of electric impulses, says Richardson Leao.

Brain control of prostheses

– We’re primarily concerned with verifying previous theories about how the brain works. It turns out that the connections don’t always look like we thought they did, he says.

He mentions some possible applications:

Cochlea implants that are used to treat deaf and severely hearing-impaired people can be more accurate, transplants of artificial body parts can be controlled by the brain, and individuals with tinnitus may get some relief. What’s more, it may be possible to understand how an Alzheimer brain functions and ultimately perhaps even be able to control it.

Richardson Leao is a researcher in neuroscience and directs a project geared to understanding the communication of brain cells.

Frightening light prevents bird collisions

BIRD COLLISIONS are a great problem in aviation. In North America alone it is estimated that bird accidents cost $500 million each year. Now Uppsala University researchers are hoping to keep bird flocks away from airports with the aid of a frightening light.

Zoecologists Anders Ödeen and Olle Hätä, at the Department of Ecology and Evolution, are busy designing light sources that will frighten away the species that cause the most trouble in landings. They are often medium-sized birds in large flocks, such as starlings and gulls.

– Since humans and birds have different colour vision, we can use light sources that create maximally frightening light to birds, but that pilots and air controllers can see just barely, if at all, and they don’t perceive it as distracting, explains Anders Ödeen.

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**Genes, brain, behaviour**

**TEXT GUNILLA STHYR PHOTO STAFFAN CLAESSON**

IN SWEDEN THERE ARE unique preconditions, with detailed registries with family information from the 16th century onward. In church books you can follow the whole family tree and sometimes also find information about the health of individuals.

These historical archives are an important reason why Elena Jazin came to Sweden in 1991, from the State University of New York, to pursue research in medical genetics. Today she’s a professor of biology.

– I was interested in applying genetic analysis to study specific behaviours – in both humans and animals. For instance, in Sweden we have been able to study large families in which psychiatric disorders like schizophrenia are more common than in the rest of the population. We studied genetic information from a large family of 3,400 individuals, where we identified a gene that can influence the disease, says Elena Jazin.

**Popular daytime course**

But it was the possibility of combining animal models with human research that inspired Elena Jazin two years ago to create Uppsala University’s first course in behavioural genetics. Owing to its great popularity, what started as an evening course soon became a daytime course titled “Genes, the brain, and behaviour.”

In her research at Uppsala she has looked at what genetic expressions could evoke similar differences between various kinds of mammals, such as humans and apes. By focusing on about 20,000 genes and using a very large number of microarray tests, she found some bearing genes that express themselves in the same way among female apes and women.

– It was an indication that there are certain gender differences. This also caused a stir in the media – but I’m pursuing basic research, and the findings can’t really say anything about differences in behaviour until we know more, she explains.

She tells a story about something that happened in her childhood in Argentina. At the age of ten she was given a canary as a presents, a male, as it is only the males that sing. To get more of them, she began to breed canaries and wound up with 30 birds in the same cage.

– But then they started getting sick, and many of them died. To limit contagion, I isolated them in separate cages, she explains.

Then something strange happened: the females started singing too. Today Elena Jazin explains this by saying that there is a region of the brain called “reg-X” that normally develops only in male canaries, but in certain situations it can also develop in females.

– In the future we want to concentrate on what happens in foetal development during the time before sex hormones begin to be produced. It would help find a piece of the puzzle regarding how genes can affect brain functions. ■

**Health benefits of Nordic food**

**A NEW STUDY at the Department of Public Health and Caring Science shows that a diet based on Nordic foods, such as salmon, Baltic herring, and pickled herring, rapeseed (canola) oil, fruit, and roots, has the same beneficial effects as the so-called Mediterranean diet. Nordic foods lower cholesterol and blood pressure, reduce body weight, and improve the body’s insulin sensitivity.**

– The Nordic diet can be seen as a locally produced alternative to the Mediterranean diet, says Associate Professor Ulf Raatou, who directed the study. ■

**More effective treatment for diabetes**

Diabetes research at Uppsala University is making great progress. Transplantation of insulin-producing cells in an arm muscle is now being tested clinically. This raises the hope that patients with juvenile diabetes, type-1 diabetes, will no longer be dependent on treatment with insulin injections.

– We wanted to place the cells in a tissue where they would not be destroyed immediately and can function optimally. In that way the starting point is better for the patient. It turns out that a muscle is a suitable spot, explains Olle Korsgren who is a professor of cell transplantation at Uppsala University and a chief physician at the University Hospital in Uppsala.

Four years ago, in 2006, the first patient received a transplant of cells in an arm muscle. The first published report about the method appeared in 2008.

– Now we’re going to monitor patients who are treated with the method, see to it that it is developed, and see if there are any counterindications, says Olle Korsgren.

The Swedish researchers were the first in the world to test the new method. Now scientists in other countries are following suit, in France, for example.

– We’re delighted that it’s being tested elsewhere as well. This makes us even more confident about our ideas, says Olle Korsgren.

It is hoped that the method will replace the present method, cell transplants in the liver, within a period of two to five years. ■

**Father influences daughters’ eating**

THE IMPORTANCE OF FATHERS for their daughters’ attitudes toward food and eating has not received sufficient attention. That’s what Josef Westerberg, Jacobsson claims in a new dissertation about risk and preventive factors for the development of eating disorders. In her studies the father’s attitudes toward food and eating were especially influential to girls in prepuberty and during puberty. ■

**First Gotland-grown truffles harvested**

RECENTLY THE FIRST truffle cultivated on the island of Gotland was harvested. In the past it has only been possible to grow the delicacy from imported plants.

– This shows that we can cultivate our own first-class truffles here in Sweden, says Christina Weden, a researcher at the Division of Pharmacognosy and director of the research that has now produced results.

She initiated the first Swedish cultivations in 1999. Ten years later, the truffle hounds Malva and Jippi sniffed their way to a little truffle fruit under an oak in a plantation in southeastern Gotland. A total of three thousand oaks were planted on the island in 2000 and 2001, all with roots colonized by truffles.

The oak plants were grown from Danish oak seeds grafted with Gotland truffles at a nursery in France. Instead of merely hoping the fungus will colonize the oaks, as is the case with wild truffles, it is now possible to perform and monitor the colonization in a laboratory prior to planting. ■

**Transplantation of insulin-producing cells in an arm muscle is now being tested clinically.**

**OLLE KORSGREN**

**PHOTO: STAFFAN CLAESSON**

**As a child Elena Jazin raised canaries. She separated the females and the males, and suddenly the females started singing too. Today she knows why.**

**PHOTO: MATTON**

**RESEARCH**

**PHOTO: CHRISTINA WEDÉN**

**PHOTO: STAFFAN CLAESSON**

**PHOTO: OLLE KORSGREN**

**PHOTO: CHRISTINA WEDÉN**

**PHOTO: MATTON**

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Warm hydrogen helps battery researchers

A RESEARCH TEAM at Uppsala University directed by materials physicist Björgvin Hjörvarsson have discovered a new mechanism for diffusion of hydrogen in transition metals. This has applications in the development of batteries and fuel cells, for instance.

Hydrogen is the lightest element in the universe and is widely prevalent in various materials. To achieve high output in batteries or fuel cells, for example, the hydrogen needs to diffuse through the material rapidly. When hydrogen atoms are absorbed in metals, this leads to a local “stretching” around the hydrogen. This stretching follows along with the hydrogen when it moves in the metal at low temperatures and causes reduced mobility. With the aid of quantum mechanical simulations, these scientists show that hydrogen atoms begin to move so rapidly that these stretchings in the metal don’t have time to follow along. This means that the hydrogen can move even more rapidly than would be expected on the basis of classical calculations.

– These calculations indicate that we can raise the velocity of the hydrogen diffusion. That’s good news for anybody developing batteries or fuel cells, says Andreas Blomquist, a researcher at the Department of Physics and Astronomy.

ANNIBRYMAN

Ocean waves provide power

UPPSALA RESEARCHERS have created an entirely unique energy technology geared to the slow movements of waves. The wave-power station is driven by a so-called linear generator, with a buoy attached by a line. The linear generator can generate electricity from the slow movements caused by the buoy bobbing up and down on the waves.

The technology has been tested offshore outside Lysekil and further developed by the spin-out company Seasabel. Now Fortum wants to use the technology to expand its electricity production with a commercial wave-power array on the West Coast. The Swedish Energy Agency is funding the project with SEK 139 million.

For one thing, they have created the world’s smallest sonar. The craft will be launched through narrow kilometre-long drill holes to explore inaccessible environments in lakes located under glaciers. But in the longer run the technology can be used in marine archaeology or to check water mains.

State millions for solar cell research

SOLAR CELL RESEARCH at Ångström Laboratory at Uppsala University has received a grant of SEK 22 million from the Swedish Energy Agency to pursue research on thin-film solar cells. The research team consists of nine people, but with this new funding, four new doctoral candidates can be recruited. Solar cells are part of the strategic commitment to energy on the part of Uppsala University. The technology has the potential to lead to lower costs compared with the solar cell technologies that dominate today.

RESEARCHERS at Ångström Space Technology Centre (ASTC) at Uppsala University have long been busy developing a very small underwater craft, no larger than a couple of soft-drink cans. Now they have taken great strides in developing the technology that the craft will take with it into the deep to take pictures of the surroundings.

NINTEEN ORGANIZATIONS throughout Europe are part of a Swedish-directed research project on storing the greenhouse gas carbon dioxide in bedrock below the sea.

Carbon dioxide is formed in all combustion. The more of the gas that reaches the atmosphere, the warmer the earth is assumed to become.

The project involves a technology that entails separating carbon dioxide before emissions from power plants and factories leave the chimney. The gas is then pumped into rock formations in the sea, about a thousand metres deep.

– The aim is to find better methods for determining what formations are fit to store carbon dioxide in and how it can be monitored, says Auli Niemi, project leader and professor of groundwater modelling at Uppsala.

Progress in deepwater space technology

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Combat resistance in bacteria
– for our children

TEXT-ANNETTE WALLQVIST
PHOTO: STAFFAN CLAESSON

– WHEN I STOOD with my first grandchild in my arms it hit me that we had messed up. I couldn’t be certain that there would be effective antibiotics for her if she developed pneumonia, says Otto Cars, professor of infectious diseases and a champion in the fight against resistance to antibiotics.

Since then he has had more grandchildren, with a sixth on the way, and Otto Cars’ commitment hasn’t waned.

Even as a young physician Otto Cars was fully aware of the risk of using antibiotics

– Even when used correctly antibiotics lead to resistance after a while. Fleming himself warned us about when he received his Nobel Prize, and my teachers at the infectious diseases clinic taught us to have respect for antibiotics, he says.

We’ve seen examples of this close to home in the resistant hospital bacteria, for instance. But in the developing world resistant bacteria claim human lives daily, says Otto Cars.

– I have a strong feeling of solidarity with the developing countries, and this gives me strength, explains Otto Cars.

Worldwide reputation

In October, as president of Action on Antibiotic Resistance, or ReAct, an international network, he organized a global conference where he managed to bring together 200 participants from 45 countries.

ReAct was conceived in response to Otto Cars’ frustration that nothing was being done globally. In only five years the organization has become well known and acquired an excellent reputation.

The conference made it clear that resistance to antibiotics is a worldwide problem.

– This is a major triumph, as antibiotics resistance was previously seen as mainly a problem for rich countries, says Otto Cars.

Now this work must go on. He is facing various cultural notions, certain countries’ political reluctance, and an industry that makes huge amounts of money on prescriptions of antibiotics. But Otto Cars does not let himself be discouraged. He is constantly thinking of new solutions and strategies.

One idea is an international antibiotics panel, another is to try to make the public as aware of the resistance issue as they are of the climate issue.

– If we can get the public on our side, then the pressure on doctors will be relieved, says Otto Cars.

In Sweden the use of antibiotics has declined, largely thanks to Strama, a strategic coordination programme that Otto Cars got started in the mid 1990s at that he still heads. It was the first of its kind in Europe, and Otto Cars had to travel around in other European countries to talk about the Swedish model of coordination.

All this as the use of antibiotics continued to rise in the world and resistance was spreading.

– If we go on like this, diseases like pneumonia will be fatal again.

IF WE GO ON LIKE THIS, DISEASES LIKE PNEUMONIA WILL BE FATAL AGAIN.

Wireless sensors – soon useful everywhere?

TINY, INEXPENSIVE, and reliable sensor technologies open unimaginable possibilities. In the very near future we will have sensors that can measure pollutants in nature, monitor patients outside a hospital setting, or meter allergy levels in houses.

Networks of wireless sensors consisting of hundreds and perhaps thousands of tiny connected units can be rapidly deployed almost anywhere, as no wires are needed. But such sensors need to be sufficiently inexpensive, reliable, and insensitive to attacks from the outside.

– We have several research projects under way, some in collaboration with industry, says Per Gunningberg, professor of computer communication and director of Wisenet, Uppsala Vinn Excellence Centre for Wireless Sensor Networks, at Uppsala University.

In as little as ten years, he believes we will be surrounded by more wireless sensors than we can imagine, probably some one hundred sensors per person.

These can be sensors inside machines and sensors that monitor wear, or sensors that can balance air conditioning and heating systems to minimize energy consumption.

Sensors will also be placed in lakes, rivers, and brooks if any pollution is suspected.

There is also a huge potential for applications in healthcare as well. Sensors can be operated into the body to keep an eye on the oxygen content of the blood. Intestinal examinations will be facilitated by tiny sensors that patients can swallow.

Wisenet has launched collaborations with several industrial companies that have shown an interest in the technology.

– It’s exciting to combine the short perspective that industry has with the long-term perspectives of research, says Per Gunningberg.

Role of consumer key in Japanese popular culture

JAPANESE POPULAR CULTURE has grown to be highly appreciated around the world in recent decades. Manga (Japanese print cartoons), anime (Japanese animated films), and above all computer games fascinate us. But what has made them so successful – not only in Japan but all over the globe? In his dissertation, human geographer Jakob Nobuo Haacke analyzed how Japanese popular culture was formed and how cultural and economic processes interact to create cultural innovations. Among other things, the analysis shows that the consumers play a major role as active creators.

Media, disasters, and stress

WHAT HAPPENS when journalists encounter victims in an acute disaster? What are journalists’ own stress reactions like when they are reporting? For a long time, Lailotte Englund, a post-doctoral fellow at the Knowledge Centre for Disaster Psychiatry, has been studying journalists’ stress reactions and ethical deliberations as professional eye-witnesses to disasters. She has also studied how this impacts their work situation and by extension media reports themselves. For this she has received the 2010 Frank Ochberg Award, one of the world’s most prestigious prizes in the field of psychotraumatology and journalism.
**Unique Research Centre**

**Focus on Russia**

Text: Annbritt Ryman

Photo: Mattson

A NEW CENTRE for Russian Studies has been established at Uppsala University. It is the only one of its kind in Sweden and will pursue interdisciplinary research focusing on Russia and its closest neighbours. Uppsala University was allocated SEK 36 million for a five-year period last autumn for research focusing on Russia and its closest neighbour as part of the government’s strategic commitment to the research field of “politically important geographical regions.” This funding provides the foundation for the new centre, which is located on the Old Forum.

Director Claes Levinsson is eager to point out that the new Russian centre is not only a matter for Uppsala. “We are seeking collaboration with other universities and colleges, both in Sweden and abroad, to expand both new and old research networks. The list of collaborative partners already includes Stockholm and Lund universities, Södertörn University College, and Stanford and Harvard in the US; for instance: Contacts and cooperation are also underway with a number of scholars and universities in Russia and its neighbouring countries. Another key mission of the Centre for Russian Studies is to make research as accessible as possible to the wider community. On its home page the research will be presented in a popular manner, and seminars, workshops, and conferences will be open to anyone interested, researchers and practitioners.”

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**Segregation research a hot topic**

SEGREGATION RESEARCH of high quality is much in demand. Segregation research at Uppsala University is pursued in an interdisciplinary setting at the Institute for Housing and Urban Research (IBF) where political scientists, human geographers, economists, sociologists, and cultural anthropologists cooperate, bringing their own particular perspectives to research the issue of segregation in an academic way. What does housing segregation lead to, and how can it be stopped? How do children from different areas look upon each other? Is it worthwhile for immigrants to move to another neighbourhood? Does living in a poor area make you poorer?

– Segregation issues are complicated in research terms: they’re also about class issues, and it’s not possible to move people around to study what might happen. But we have the world’s best databases to tackle these matters, so our research garners a lot of international attention, says Roger Andersson, professor of human geography and director of research.

These databases make it possible to follow the entire population over a long period: how people grow up, how they feel, and what they earn. With this data, questions can then be posed about neighbourhood effects, the importance of networks and choice of school. It’s also interesting to look at towns of various sizes and at political attempts to counteract housing segregation. Housing planning is one of few tools for society to try to stop segregation. Roger Andersson sees that much has changed in the 15 years that he has researched segregation. This includes the political importance of the issue, but also how people in general view housing and segregation.

– People make more strategic choices now. Households themselves are driving the segregation process. And values are hard to get at for planning measures, he explains.

Their dialogue with the wider community is lively, and they are often asked to perform analyses or planning data for various municipalities. The researchers are often invited to give lectures in many different contexts.

– It’s fun and important. We want to be relevant to the community, says Roger Andersson.

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**More efficient mine removal with new technology**

MODERN LANDMINES are often made of plastic and are therefore hard to detect with today’s technologies. Erik Gudmundsson, at the Department of Information Technology, shows in his dissertation how NQR technology (quadrupole resonance) could find mines by detecting the explosives they contain.

In his research Erik Gudmundsson studied mathematical modelling and estimation of unknown parameters as applied to the detection of explosives, among other things.

Together with research teams at Lund University and King’s College, London, he has shown that NQR, a relative of the better-known magnetic resonance (MR) technology, can be used to detect landmines, for example. The technology could also be used to reveal explosives in security checks at airports.

NQR technology has the advantage of not requiring the powerful magnetic fields that are used in MR. This means the technology can be made portable, which is a precondition for its use in mine removal. Among other things, Erik Gudmundsson has examined various ways to eliminate unwanted static, which renders detection more difficult, and ways of measuring more instantly, which is a must if the technology is to be useful in practice.

The next step is to move the technology from the laboratory out into the field, says Erik Gudmundsson.
A FEW YEARS AGO Ulla Stroh-Wollin started to get interested in swearwords. The Department of Scandinavian Languages already had a collection of dramatic dialogues from the 18th, 19th, and 20th centuries, material that provided an excellent picture of how cursing has changed over time. Since then Ulla Stroh-Wollin’s studies have come to include contemporary curse words, and thus the entry of sex words in Swedish swearing. Although much has happened since it was regarded as uncouth to exclaim “my God,” in many ways the present-day use of sex words follows the same pattern as good old-fashioned cursing.

The words and expressions we use when we swear are interesting in many ways. For one thing, they are hard to classify grammatically. They have functions in the language that no other words can fulfil. For instance, if you want to intensify a question word, try to replace “hell” in “what the hell” with a word that can’t be classed as a swearword. Impossible.

Swearwords are also a type of words or expressions that have been dissociated from their literal meaning. – When I say “God help me,” I hardly mean to invoke God and ask for divine assistance, says Ulla Stroh-Wollin. The same goes for Swedish swearwords that use numbers. “För tusan” [for thousand] comes from a curse where you hoped to bring down a thousand devils on someone. This is something Swedes don’t think about when they use the expression today. Numbers have also come to be curse words all by themselves. Other examples are “atans” [eighteen’s] and “för sjutton” [for seventeen].

In connection with the 150th anniversary of the subject of Scandinavian languages in 2009, the department arranged an activities day at the Gustavianum. My doctoral student, Erik Falk, and I decided to run a survey; for general jollification, about attitudes toward swearing. We used some questions from a 1970s survey. The results were surprisingly interesting.

Tolerance on the rise The general level of tolerance for swearing turned out to be higher today than in the 1970s, as expected. But the difference across generations is great, which is noticeable in terms of the place of sex words in cursing. Young people swear with sex words alongside traditional swearwords, making no distinction. Just as older curses have lost their literal diabolical or divine meaning, the new sexual swearwords have been dissociated from their literal sense. Thus, someone who exclaims “kuken” [penis] when they hit their thumb with a hammer has the male sex organ in mind just as little as a person who ends a sentence with “God help us” is hoping for divine intervention.

– Older people, on the other hand, do not regard the Swedish words for cunt, fuck, and cock as swearwords. To them the words have only their actual meaning, says Ulla Stroh-Wollin. She seldom hears sex words used by her own generation, but otherwise her relationship to swearing is rather laid back. When her children swear she poses follow-up questions to show her interest rather than admonishing them. Ulla Stroh-Wollin admits that she swears a good deal, for a middle-aged female academic. Some of her curse words have been culled from the past, from her research material.

– I’ve taken a fancy to the word “knäveln,” [“nevil”] for instance. I’ll say “where the nevil is the key.” I think that sounds nice. But if the situation demands it, I can also say “helvetes jävla skit” [goddamn son of a bitch], says Ulla Stroh-Wollin.
INDIA is a country that is making major commitments to expanding its higher education. – The country has more than 500 universities, so there is ample opportunity to develop collaboration with us here in the Nordic countries, says Mirja Juntunen, director of the Nordic Centre in India, NCI, whose host university since 2005 has been Uppsala.

Has a service function

The Nordic Centre in India, NCI, is a consortium. Swedish members, besides Uppsala University, are the universities of Stockholm, Umeå, Gothenburg, and Lund.

NCI sees itself as a service function geared to supporting the universities in the form of information and creating opportunities to establish contacts and collaborations between the Nordic countries and India.

With philosophy as a foundation

STUDENTS WHO take the new bachelor programme are in good company. The UK prime minister David Cameron took the British equivalent, as did Benazir Bhutto and Bill Clinton. And many others.

The Oxford programme, Philosophy, Politics, and Economics – PPE, is prestigious and has been offered since the 1920s. Ever since then Oxford students have been provided with tools for critical examination, reasoning, and making decisions about social issues.

– The programme is intended for anyone who is interested in societal issues and who needs tools to analyze them. This may be future politicians, but also analysts, civil servants, and journalists, for example, says Folke Tersman, who is head of the Department of Philosophy at Uppsala University.

The programme was developed using the Cultural and Societal Analysis Programme as a model. The main subjects are philosophy, political science, and economics, with the stress on philosophy, but it is also possible to choose so-called tools subjects or cultural anthropology.

What’s unique about the programme is the combination of main subjects, which Folke Tersman maintains provides a broad knowledge base for analysis and reasoning about societal issues and problems.

With philosophy as a foundation, students can discuss what a just society looks like. At the same time, the insights gained from political science and economics can be used in realistically grounded philosophical discussions about what political measures are required to bring us closer to the ideal. – The goal is to offer a programme that is socially useful. Some debates and decision-making processes are not as good as they should be because they are based on narrow perspectives. The new programme develops students’ ability to look upon societal issues from a bird’s eye view, says Folke Tersman.
Abbe Aveskogh is one year old and is performing his first archaeological excavation together with Nora Aveskogh and his sister Smilla Kallin.

To them it’s play, but it’s serious business to students on the Programme for Preschool Teaching.

THE STUDENTS ARE practice teaching. Their assignment is to create an educational station in a museum setting. Children attending Uppsala’s municipal preschools come with their teachers to experience the exhibit.

– When they see how the children react, they get direct feedback on their ideas. What’s more, the students see how preschool teachers act together with their pupils, who want to start experimenting. It’s very educational, says Johnny Hager – director of the preschool teaching programme.

These activities have been running for four years, and preschools are on a waiting list to be allowed to come and participate.

– We can also learn how we could reach out more with our activities. Usually the preschool children who come are visiting a museum for the first time. We’re learning how we can get better, says Cecilia Odman, museum educator at Museum Gustavianum, with sand flying through the air behind her.

– Look! A bone!” exclains Smilla.

– The goal is to create a system that in the long run will help raise the status and understanding of teaching qualifications. This is in turn would benefit our students – good teachers make a better university, says Louise Rügheimer, head of MedfarmDoIT, an office that works with IT solutions in teaching at the Disciplinary Domain of Medicine and Pharmacy.

Tool assembles teachers’ qualifications

– ARBITRARY OPINIONS often turn up when attempts are made to judge what the characteristics of good teacher are. Therefore, our goal is to have teaching qualifications assessed in a structured way, without personal opinions, says Karin Apelgren, who is head of the Division for Development of Teaching and Learning.

She and her division have been working since the early 2000s with the concept of a teaching portfolio – where the basic idea is for teachers to compile their qualifications in a way that makes it easy to evaluate their teaching skills. Teachers should include not only their teaching experience but also the hows and the whys. This is the working model that is now being digitized in the Web-based portfolio of teaching qualifications.

– You have to get it straight that it’s not only the children who create these situations, claims Martin Karlberg, a doctoral candidate at the Department of Didactics.

He has studied the instructional programme Comet (Communication method) and prepared a report on that. This is because some pupils would rather get negative attention than none at all. Part of the programme is about ignoring pupils’ negative behaviour.

– Ignoring pupils is a programme feature that prompted some criticism in the media. But we maintain that ignoring pupils should never be used without an analysis of the situation, and always in combination of encouragement of the pupils. An additional central feature of Comet is to draw attention to classmates who behave as they are supposed to. Clear rules, structured teaching, and routines that work for the children are also important.

– We need to create optimal conditions for children to behave the way we expect them out trends rather to encourage pupils to behave disruptively, says Martin Karlberg.

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New book: Making higher education even better

INTERNATIONAL competition is stiffening in the field of education. At the same time there is concern that the quality is declining. At Uppsala intensive educational development is underway to meet the competition and prepare students for careers in the best way.

There are many questions: What is “higher” education? What is required of teachers and students for instruction to be as good as possible? How can quality be raised even more, without high costs?

In a new book based on a qualitative analysis of programmes at the University of Oxford and Uppsala University, economic historian Christopher Lagrange presents answers to many such questions. The book was written within the framework of “The Oxford-Uppsala Programme”, a research and education collaboration between Uppsala and Oxford.

International top grade

STUDENTS place Uppsala University right at the top of all universities in Europe in the subject of biology, and in second place in chemistry. This is reported in this year’s results of the European ranking of science subjects, CHE. Also in physics, mathematics, political science, psychology, and economics Uppsala is on the elite list.

Programme for teaching

Help dealing with rowdy pupils

DISRUPTIVE and uncoordinated pupils are a problem in many schools, but it’s possible to do something about it, a study from Uppsala University shows.

Encouragement in combination with ignoring them in certain situations are part of the recipe, as is an awareness that everything that happens in the classroom happens in an interaction between teachers and pupils.

– You have to get it straight that it’s not only the children who create these situations, claims Martin Karlberg, a doctoral candidate at the Department of Didactics.

He has studied the instructional programme Comet (Communication method) in various forms. The programme is about the notion that children and adults behave in different ways depending on the setting they are in and what reactions they are getting.

– That’s why it’s important how the teacher acts. Nagging and even bawling them out trends rather to encourage pupils to behave disruptively, says Martin Karlberg.

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A thousand times faster hard drives

THE BEST HARD DRIVES in modern computers can write a magnetic “bit” in a nanosecond. Nonetheless the process is incredibly slow for the huge amounts of data that have become ever more common. Uppsala researchers are now showing in the journal Physical Review Letters that magnetic storage on hard drives can be at least a thousand times faster.

The Vikings chiselled information that was important to them on stone tablets, an extremely time-consuming activity. Today we quickly save on computer hard drives, but with the enormous amounts of data that are now commonplace this process still takes a long time. Information is stored in magnetic bits, that is, tiny areas that have a certain magnetic direction to be read as either 0 or 1.

Researchers have recently discovered that the magnetism of a bit can be erased optically by ultrafast laser pulses, but there has been no basic understanding of this process. Now three Uppsala University physicists, Marco Battisti, Karel Carva, and Peter Oppeneer, have demonstrated how ultrafast demagnetization occurs through laser excitation.

– We explain in detail how demagnetization takes place and thereby contribute to our basic knowledge about the superradiation streams that are relevant to develop further to allow the creation of new hard-drive technology, which is especially important for tomorrow’s information-technology-based societies, says Professor Peter Oppeneer, who directed the study.

Uppsala researchers are now showing in the journal Physical Review Letters that magnetic storage on hard drives can be at least a thousand times faster.

Fashion and hamburgers at year’s Anders Wall Lectures

THE HOTEL MAGNATE behind Elite Hotels, the former supermodel who is now busy launching her own skin-care line: One who wants to make Sweden’s best hamburger and the former editor-in-chief of the newspaper Dagens Nyheter. The four keynote speakers at this year’s Anders Wall Lectures were united by entrepreneurship.

To stimulate the entrepreneurial spirit among students, researchers, and teachers at the University’s many faculties, a number of speakers are invited each year to deliver the Anders Wall Lectures. This year’s keynote lecturers were Emma S. Wiklund, who spoke about her triumphs and tribulations of creating a business community or the public sector.

The four key speakers at this year’s Anders Wall Lectures were united by entrepreneurship.

The Hotell, Engelmark.

Swedish researchers this year’s innovators

SARA THORSLUND and Johan Krosay, at the Department of Medical Biochemistry and Microbiology, were named Innovators of the Year in Uppsala County. They have developed a system that simplifies the development of drugs. The system, called CellDirector, will simplify and reduce the number of cell biological experiments that are done today. The annual prize for innovation is awarded by ALMI Företagspartner Uppsala AB to those who have made the results for the company while at the same time being interesting research that can be published, explains Torbjörn Fangström, who is one of the three co-directors at Ångström Materials Academy, ÅMA.

The foundation is a desire to find faster and more efficient paths out into the wider community and industry for the knowledge that research generates.

– In that way research will be better able to contribute to economic growth in Sweden, says project co-director Fredrik Engelmårk.

Companies exist in a reality where daily production and profits are in focus. This can make it hard to raise their sights and invest in product development. At the same time, many researchers have little knowledge of the problems that plague companies.

A typical ÅMA project starts off with the company’s questions and finds researchers who can work together on the project. The advantage of this is that new groupings simultaneously arise among researchers at Ångström Laboratory who have never worked together before.

– Furthermore, many scientists find it stimulating to work together with industry in concrete projects, since this can lead directly to practical applications, Fredrik Engelmårk points out.

Bringing together

The project leaders claim that Ångström Laboratory is one of Europe’s leading materials research centres, whose strength lies in the fact that it works with a broad materials science perspective.

– Scientists are good at creating materials with various properties, but they’re not so good at scaling up and producing large quantities of a material they created. This is where industrial ties can be useful for researchers, because there are major challenges in that step too, says Torbjörn Fangström.

The collaboration project has been underway for two years and is based on a partnering model where companies pay a fee to participate. The fee gives them access to scientists at Ångström Laboratory who are interested in working together.

Thus far it has only been large companies that have been able to take part in joint research projects, but now the idea is to find a similar partnering model to include medium-size and small companies as well.

– Those we’re taking to the next step this coming year are five core partners and five smaller companies. To us it’s important to have a broad spectrum of companies, says Annika Olsson.

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N E W  H O R I Z O N S  2 2

Innovation
Despite dismal future prospects for educated artists, interest in aesthetic and artistic programmes has virtually exploded in the post-war period. Today some 10,000 students are taking aesthetic programmes in upper-secondary schools. Pressure from applicants for admission to the most attractive higher education programme at the Royal Institute of Art in Stockholm is very high. About 800 people apply each year. Only 25 are admitted. But even among those who manage to get into the five-year programme, extremely few succeed in getting established as artists, and even fewer can make a living from their art.

Why do so many apply for admission to an artistic programme in spite of this?

– In art, other values prevail than in the community at large. Symbolic assets are valued more highly than money there. Many are willing to reject secure employment and stable economy in favour of a coveted place at an art institute or a position in the art world, responds project director and economic historian Martin Gustavsson.

– The key to understanding the world of art is its valuation of creativity, talent, and freedom. Freedom to find yourself and pursue your own path, adds Mikael Börjesson, who is an educational sociologist.

What does it mean to “succeed” in the art world?

– It means a combination of various things: to be shown at leading galleries, receive symbolically important grants, be mentioned by influential critics, and having your works purchased by art museums, says art scholar Marta Edling.

Who then applies for admission to artistic programmes and ultimately manage to become established as artists?

The researchers’ study covers the 1938-2008 period. The results show a steady over-representation among both students and artists of men and of the culturally well-off middle class. This was previously known. But what the study also shows is that this socially unbalanced recruitment has grown stronger with time. Part of the reason for this is the growing number of women who have been admitted to the programme. Today the majority are women, and women from the cultural middle class have increased in number at the expense of working-class men. Thus working-class backgrounds are growing more and more rare among both students at the Royal Institute of Art and among leading artists.

The art of success

At least five years of higher education, minimal prospects of success, even less of a chance to support yourself with your profession – who would commit to such a career? Now researchers at Uppsala University have studied the conditions for artists.

Facts about the project

“The Art of Succeeding as an Artist” is a multidisciplinary research project with scholars from economic history, sociology of education, and art studies, funded by the Swedish Research Council. The study covers the post-war period and a great deal of data has been gathered about both art institute students and artists via historical national registration records, archive material from art schools and other institutions, and interviews and questionnaires.

More detailed findings are available on the Swedish Research Council home page: www.vr.se under “Resultatdialog.”
Silver Bible on the Web

The Silver Bible in Uppsala is Sweden’s most precious book treasure and one of the world’s most famous manuscripts. It was written in Italy in the early 500s. It has long been on view at Uppsala University Library but now is accessible on the Web for the world to peruse.

TEXT ANNA MALMBERG
PHOTO: UUB/MAGNUS HALMARRSSON

DIGITIZING and publishing the Silver Bible as a project that was originally intended as an aid for language researchers and students, especially scholars of Gothic. But historians, archaeologists, and others who are interested in Gothic culture can also benefit from the project, as can anyone who is interested in Gothic scripts and literature. Despite its name, the Silver Bible is not a complete bible, but a notation of the four Gospels, an evangelarium, in the Gothic language. The translation to Gothic from the Greek was done in the 4th century by the Gothic bishop Wulfil, who also constructed the Gothic alphabet. Originally the Silver Bible had at least 306 pages. Of these, 187 are preserved in Uppsala. The Silver Bible was probably written in Ravenna in the early 6th century. Its written on thin purple-coloured parchment with gold and silver ink. The silver script dominates, which led to the name of “silver book,” or in Latin, “codex argentenus.” It probably originally had a luxury binding adorned with pearls and gems. The text of the Silver Bible is one of the oldest and most comprehensive of all extant documents in the Gothic language. The writing area of each page follows the principles of the golden section, that is, the height relates to the breadth as the sum of the height and breadth relates to the height. The four aces at the bottom of each page are canonical monograms, one for each evangelist. They constitute a cross-referencing system for biblical places in the Gospels.

The Silver Bible was known in the 16th century, but it was kept at a Benedictine monastery in Werden in the Ruhr region. Before the year 1600, it passed into the ownership of Emperor Rudolf II and was held in Prague, when the Swedish army stormed the city in 1648. As Swedish war booty, it was taken to Stockholm and became part of Queen Kristina’s library. Following the queen’s abdication it fell to one of her librarians, Isaac Vossius, who took it to Holland. From there it was purchased by Chancellor of the Realm (and University Chancellor) Magnus Gabriel De La Gardie, who donated it to Uppsala University in 1669.

What’s the point of working?

TO “CREATE JOBS” is something all parliamentarly parties vie with each other to promise. But what is the real point of working eight hours a day until retirement? And what happens in society when work becomes an end in itself? Roland Paulsen, a sociologist at Uppsala University, claims in a new book that work is being drained of its meaning.

With technological development, the need to work has never been less than today. Owing to greater specialization, more efficient organization of work, and technological innovations, the productivity of labour has multiplied many times over. Yet we still work today more than during most of human history.

– Since the 1950s productivity in Sweden has more than quintupled. But this has not entailed that we now work five times less, on the contrary, working hours have remained relatively constant, says Roland Paulsen, a doctoral candidate in sociology and author of the new book “Arbetssamhället” [The Work Society]. In the book he describes the prevailing ideology of work in a historical perspective. From having been characterized as something repulsive, as in Plato and Aristotle, in Western civilization work has come to be viewed as something inherently good.

– As work has become more and more superfluous, we have quit asking ourselves why we work so much and what work is good for. In the political debate, for instance, people no longer speak of working in order to create economic growth. Nowadays it’s rather a matter of growth creating jobs, reflects Roland Paulsen.

Students in revolt!

University leaders want to implement obligatory, scheduled instruction. “A threat to academic freedom!” claim the students marching in protest. Yes, this is true – but it was 150 years ago. At that time freedom from obligatory attendance was seen as an indispensable part of academic freedom.

TEXT ANNBRITT RYMAN

THIS AND A NUMBER of facts about the history of Uppsala University can be found in a new book that is part of a major research project on the history of the University in the 19th and 20th centuries. The director of the project is Professor Tore Frängsmyr, and the author of the now finished volume is his son Carl Frängsmyr, a researcher at the Department of History of Science and Ideas.

– Previous historical accounts cover up to the 19th century and were written a hundred years ago by Claes Annerstedt. We’ve had no modern history that also covers the last two centuries. That’s what we’re writing now, says Tore Frängsmyr.

– The volume presented to the Vice Chancellor on the 533rd anniversary of the University, October 7, treats with the 1852-1916 period and is part two in a series of four.

– The “academic freedom” that students were safeguarding in the late 19th century entailed that many students spent ten years or more at the University. There were no requirements to take a degree. In the early 20th century, Sanctions universities could impose were fines, jail, or expulsion. This meant that everyone tied to a university stood outside the state legal system.

– The power of universities to impose penalties was also regarded as an indispensable part of academic freedom, says Carl Frängsmyr.

Independence as a thread

But following severe criticism, not least from the liberal press, the judicial power of universities was hard to reconcile with the principle of equality before the law, and it was fully abolished in 1909.

The University’s independence, rather dependence, on financiers and the wider community, runs as a thread throughout Frängsmyr’s historical account.

In the 19th century the University became part of society in a different way than previously. This is seen not least in the fact that in the 1860s the University was completely dependent on donations for its survival. Ninety years later, 70 per cent of its economic base consists of government allocations, says Carl Frängsmyr.

The University has always been dependent on someone, be it the state, the church, or the business community.

– No truly free and independent university has ever existed, says Tore Frängsmyr.

ORDER YOUR COPY at Carolina Rediviva and Museum Gustavianum at the regular price and at a discount price for Uppsala University employees and retirees. It can also be bought at the University Library’s Online Shop: www.mamut.net/carolina/shop/

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The Knowledge Bank is a goldmine to those looking for information about violence against women, Men’s Violence against Women, NCK.

The idea is for the Knowledge Bank to be a collaboration between NCK and the Division for IT and Procurement, which has been set up to put together content, form, and technology. The project director at IT and Procurement, Anna Åhnberg, explains: "We have used the right content and continuously monitored developments in the outside world, to keep material updated, and to add new subject guides and researchers."

A valuable source

The prime target group is those who work with or are interested in issues involving violence against women. This might include people in social services, health and medical care, civil servants at authorities, journalists, and researchers.

The Knowledge Bank has been up and running since mid September, and the pressure was great when it was to be launched. In one month, 8,600 PDF files were opened. The technical system we have used for the Knowledge Bank could be used by any department whatsoever, says Anna Åhnberg.

"The use of iPhones and Androids is dramatically rising, and we want our students to be able to benefit from the new technology in their everyday lives. And it’s not just for looking up information on multiple devices, it’s also for choosing a partner." Poor partner choice in muddy water

The Björkén Prize

The Björkén Prize is one of Uppsala University’s largest academic awards for outstanding research. It was awarded for the first time in 1802. This year’s prize goes to Professor Måns Ehrenberg, at the Department of Cell and Molecular Biology.

"I think this paper shows it is possible to improve the outcome of private share placements also by relatively simple means. This is a relevant topic and a good conclusion that can be implemented in practice," says Gustaf Rentzhog, CEO at Söderberg & Partners.

Economics students wrote best paper on finance

Two Uppsala students, Daniel Rados and Toni Lovric, have won the prize for “Finance Paper of the Year.” The prize is backed by the newspaper Affärsvarlden and Söderberg & Partners.

To be nominated papers must address the subject of saving and financial placements for private individuals. In competition with 37 essays from eleven universities and colleges around Sweden, the Uppsala students won SEK 100,000 with their paper “In Potroski’s footsteps.”

"I think this paper shows it is possible to improve the outcome of private share placements also by relatively simple means. This is a relevant topic and a good conclusion that can be implemented in practice," says Gustaf Rentzhog, CEO at Söderberg & Partners.

The jury’s reasoning: "The paper is relevant to individuals interested in private shares. It draws clear conclusions that can be applied to private individuals when the information for analysis is available as public information."
"Contract education has huge potential"

Contract education at Uppsala University is to grow. – There’s a huge potential here for both collaboration with the wider community and more income for the University, says Defel Clove, head of the University’s Division for Contract Education. This is a necessity if we are to be able to develop the University’s total contract education volume. Here at the Division for Contract Education we have the knowledge and tools to support departments. It’s also a matter of making Uppsala University more visible as an active and important actor in the contract education market. Offensive marketing and establishing robust and close relations with clients and departments will be key tasks for the Division in the near future. – If we’re not visible, we don’t exist, says Defel Clove.

No system in common

Today contract education is largely decentralized to the various departments. This means there is no shared system for dealing with and developing customer contacts. How courses are set up and priced can also vary a great deal. Defel Clove has therefore been tasked by University management to devise a way to rationalize these operations.

New input for teachers

But it wasn’t without complications. – Commercializing university education was not uncontroversial. It’s easy for cultural clashes between business interests and academia to flare up.

Defel Clove, who also has experience from the consulting world, feels that the challenge is to accentuate the benefits of collaboration. Committing to continuing and further education of mid-career individuals develops both the University and the region, he claims.

– It’s about developing customer-adapted courses that are in demand in society and business. To do so, you need to forge contacts outside the academy and be sensitive to their needs. Contract education is a key part of the University’s Third Mission, and it strengthens the competitiveness of the region.

New portal for alumni launched

NOW UPPSALA University alumni have an enhanced tool to stay in touch with one another. Starting in the new year there will be an entirely new portal with a variety of new functions. Among other things, the new portal provides applications for social media. The new system also simplifies work for all University employees who are involved in external contacts. The system is supplied by MiraN Network, which is the market leader in the Nordic countries.

Alumni Network

Uppsala University’s Alumni Network – a professional and social network for former students and associates. The Network keeps you abreast of what’s going on at Uppsala University and provides an opportunity to stay in touch with the University and your friends. For registration and more information: www.uu.se/alumn or contact the Alumni Office: alumni@uadm.uu.se

Valuable drivel on Facebook

HAVING MANY superficial contacts on Facebook may be more worthwhile than we thought. This is shown in a new report from the Swedish IT User Centre (NITA). The networks that individuals create by using social media make people less dependent on major actors. On a site like Facebook you can get job tips, create useful contacts, and, as company owners, find solutions to diverse practical problems. Such sites also enable people to publish things free of charge.

– One realistic effect is that many costs for running activities ultimately come down, which will probably prompt more people to start a business, thus altering working life, says Håkan Selg, who is a doctoral candidate at the Department of Information Technology and project director for the report.

– The portrait, comments, and updates are a constant reminder of our Facebook friends’ existence. This is what makes us perceive them as closer to us than acquaintances who are not on Facebook, he explains.

Where do you get your inspiration?

– My sources of inspiration are Beetle, Hugbard, and Redeye, but of course Calvin and Hobbes is also a great favourite. Cartooning has become a major source of relaxation for me in my spare time, and a really fun hobby, especially if others can also appreciate these little thoughts.

I’VE HAD ALZHEIMER’S AS LONG AS I CAN REMEMBER

JOHANNES BORCEGÅRD

... UNCERTAIN ONSET OF DISEASE

TOMAS WETTOFF, chief physician in rheumatology at Gavle Hospital, researcher at the Centre for Clinical Research at Uppsala University/Gävleborg County Council, and, in his spare time, a cartoonist. He holds a PhD from the Faculty of Medicine at Uppsala University and is continuing his research at the Centre. Tomas Wettöff has periodically worked at the Uppsala University Hospital rheumatology clinic and has a research collaboration about joint injections with cortisone. This autumn Tomas Wettöff is also taking a course in university-level teaching at Uppsala University.

How did you start drawing cartoons?

– In my teens, comic strips were my greatest interest. I drew quite a bit myself as well. I did have dreams of being a professional cartoonist, but my parents advised me to get a real education. When I was at home with my sick daughter in 1999, and we were sitting and drawing together, my interest was awakened again. That’s when “Pottholzt ruminations” saw the light of day. My cartoons have since become a regular feature in the newspaper Gefle Dagblad, among others. Two books of collected cartoons have also been published.

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New input for teachers

But it’s not only the wider community that benefits from contract education. – The University’s researchers and teachers gain from it as well. Teaching mid-career professionals entails new input that enriches both research and undergraduate education. At the same time, it’s a source of income for departments.

Today the University’s contract education turns over about SEK 70 million, which is a modest sum that Defel Clove believes will be doubled and trebled in three to four years. Together with some 15 associates at the Division for Contract Education (previously Uppsala University Education) he is now busy increasing the total volume of contract education at the University.

– With its breadth and cutting-edge knowledge, Uppsala University has a considerably larger role to play in lifelong learning, he claims.

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TEXT: ANNBRITT RYMAN
PHOTO: STAFFAN CLAESSEN

THAT’S THE REASON Anna Skarhed was one of the founders of the jurist network Hilda in 2006. The goal is to support women jurists in their professional development and thereby increase the proportion of women directors and co-owners. For the latter she has been criticized by Elisabeth Svantesson, Conservative board member of the Swedish National Audit Office, who claims that this may entail a risk of conflicts of interest and partiality in state appointments:

– I don’t understand this criticism. Hilda is a fully open network with the same goals as the government and parliament have set up, namely to increase gender equality in the judicial system. How could that lead to partiality?

Anna Skarhed is also on the board of the Foundation for Uppsala Law Alumns. My involvement and contacts there have not been criticized. I obviously know many women and men in both the legal system and the administration. This is inevitable and something I have to deal with in a proper way in my role as JK, just as I had to as a judge.

With her more than 30 years within the Swedish justice system, she knows more than most about how things work in practice.

What do you think of the quality of today’s recent law graduates?
– They are extremely knowledgeable and capable. But ties to the real world are key. This is what I want to help provide in my alum work. We need wise, judicious jurists – not bureaucratic sticklers.

The office of the Chancellor of Justice is situated in what is traditionally seen as Stockholm’s oldest building – Birger Jarl Tower on Riddarholmen Island. The tower was built as part of Gustav Vasa’s defences around the capital with a view of the Riddarfjärden waterway.

– Sometimes it’s hard to turn away from the charming view, Anna Skarhed admits. But she doesn’t have much time to be engrossed by the view. Some 25 people work here. Not all that many considering their mission of serving as the foremost representative of the government and state, with oversight of authorities and courts.

Private individuals can also come here if they feel they have been unjustly treated. This provides material for us to propose changes.

One important task of JK is precisely to uncover and attend to flaws in the system. Her predecessor Göran Lambertz stirred a debate about the issue of victims of unfair convictions. Anna Skarhed sees a need to focus on other things.

Only a tiny portion of cases go to court. The task of “safeguarding the rule of law in public activities,” as it says in the government’s commission for the office, is a central focus. This has to do with how public administration fulfills its basic function – where many private citizens are impacted.

Society is becoming more and more complex, and there is a constant need to maintain and re-secure fundamental democratic and human rights in public administration.

Any concrete examples?
– Not all that concrete, but it’s important to keep an eye on matters of ethics and basic values in public administration.

The Chancellor of Justice is also the prime legal representative of those in power, the government. A divided assignment?
– Yes, JK has a complicated role and sometimes needs to weight the interests of individual citizens against those of the public.

That’s when it’s especially vital to observe the requirements of fairness and impartiality. Being Chancellor of Justice is one of the most difficult yet most interesting jobs you can have.

As one of the country’s leading jurists, do you feel that you have any real power to change things?
– Yes, I have a voice that is heard. But it cannot be my personal voice, but rather that of the office. You have to keep your ego in check. It isn’t my personal preferences that should determine what the Chancellor of Justice gets involved in.

Anna Skarhed

Family: Husband and grown children.
Education: Law degree from Uppsala University.
Spares time: Enjoying nature and good books.
Secret talent: Practises Qigong – a form of Chinese movement meditation.

Favourite student nation (club): Any and all.
Some of our sharpest minds have been awarded the Nobel Prize, the finest prize of all. The Nobel Prize and Uppsala University – two concepts that match up well. We are proud of all of our Nobel laureates. Just how many there are is something we sometimes discuss. It depends on how we count. Either we count those who were active at the University when they won the prize or we count those that were associated with the University in their activities. Perhaps it doesn’t really matter.

But the Nobel Prizes play another important role. They can highlight research areas, ensure that funding flows to research, and moreover make it easier to forge contacts with other universities.

Traditionally, Nobel laureates come to Uppsala to talk about their research. They visit us because they see the value of working together with our University and researchers. Often the laureates are researchers we have collaborated with for a long time at the departmental level, or in some research project. This year, for example, the Nobel laureate in Chemistry, Professor Richard Heck, is a research colleague I had excellent contact with during my years in research.

This is what research collaboration is like. The world is shrinking. We get to know each other across national boundaries, and we find shared interests when we meet to solve problems jointly. Our role is to create the preconditions. The challenge is constantly to advance our positions for development and for greater knowledge – toward new horizons.