

THE **UiB** MAGAZINE.

2018/2019
Research and education at
the University of Bergen



HUNTING MYSTERY LIGHTNING FROM SPACE

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ACADEMIC KNOWLEDGE IS DECISIVE FOR THE FUTURE

Knowledge that shapes society is the vision of our university's strategy. With this in mind, it is not without reason that we have taken the role as Norway's leading university on the Sustainable Development Goals. The goals are descriptive of our globe's most important challenges, and academic knowledge is a crucial component in dealing with them.

As an international university, UiB aims to strategize for a long-term perspective. We seek to reach our goals and ensure the best education and research. Therefore we have just recently launched an action plan on our collaboration with China. With the plan we will strengthen our education and research teamwork with the Chinese on many areas. Especially when it comes to sustainable development and climate research, but also in regards of cultural exchange.

One of our most protruding strategic projects is the development and realization of knowledge clusters. In the knowledge clusters, we will develop education programmes for the future, rooted in and closely connected to outstanding research environments. Last year we officially opened Media City Bergen, along with our partners in the cluster. It is with great pride we see students working in closer relations to Norway's big media houses, and also major international media-technology developers. The progress on our other knowledge clusters is positive as well. Our marine cluster will come to characterize Bergen's reputation as Norway's ocean city, and we recently named our health cluster; *Alrek - health cluster*.

Last year, the story of the "Plastic whale" that stranded at Sotra on the west coast of Norway got a lot of attention. When scientists at the University Museum of Bergen opened the stomach of the stranded whale, they found over 40 large pieces of plastic. As a consequence of the widespread coverage of the whale, the Norwegian populace has certainly become a lot more aware of the environmental issues of using plastic. I think this in turn will make people even more alert and prepared to respond towards challenges posed by climate change. Dissemination of knowledge can change the world!

In the magazine, you will therefore also meet some of our most esteemed researchers, like Bruce Kapferer who lead an ERC Advanced Grant project named *Egalitarianism*. But also researchers like Jill Walker Rettberg who leads an ERC project on visual technology, and Edvard Hviding with his "Toppforsk" granted project on the consequences of rising sea levels for the maritime sovereignties in the Pacific. One can also read more about our international, or should I say intergalactic, reach with the launch of the "SpaceX ASIM-rocket" which had UiB technology on board.

The magazine will give you an insight in our broad activity, and into our goal of delivering world leading research and education that forms the society. An important part of our job is also to disseminate our work so that the rest of the society can take advantage of it.

Enjoy the reading! ◦

Dag R. Olsen
Dag Rune Olsen
 Rector, University of Bergen

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ABOUT UiB

The University of Bergen (UiB) has approx. 16,900 students and 3,800 staff
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THE BLUE LAGOON: Marovo Lagoon of Solomon Islands, with one of the world's largest and richest coral reefs and the place where Professor of Social Anthropology, Edvard Hviding, embarked on his research career. PHOTO: EDVARD HVIDING

Island nations could disappear due to climate change

Social anthropologist Edvard Hviding is one of three University of Bergen researchers to receive five years of major funding from the prestigious Toppforsk programme, awarded by the Research Council of Norway, for his project *Mare Nullius*.

The project *Mare Nullius? Sea-Level Rise and Maritime Sovereignties in the Pacific – An Expanded Anthropology of Climate Change* has been developed over many years by Professor Edvard Hviding of the Department of Social Anthropology at the University of Bergen (UiB).

A feeling of personal indignation

The *Mare Nullius* project poses some uncomfortable questions about the condition of our globe: What happens when entire nations stand to disap-

pear from climate change and rising sea levels, a scenario faced by several low-lying Pacific Island countries? What status is accorded to those who have to leave islands that are no longer inhabitable? And, what is the fate of the 200-mile exclusive economic zones (EEZs) of island states when the land upon which maritime boundaries are based is inundated by a rising sea?

"*Mare Nullius* is the culmination of 32 years of research engagement in and with the Pacific Islands. The project's background is one of per-

sonal indignation on behalf of the people of the Pacific, who have cared for me so generously. They contribute the least to global warming, yet are set to suffer the most from its effects. Through my fieldwork in the Solomon Islands and encounters and conversations over three decades with people from most of the Pacific, I have been deeply engaged in the fight by the island nations against rising sea levels, intensified extreme weather and other effects of global warming," Edvard Hviding explains.

Sustainability and science diplomacy

The anthropologist is also one of the main contributors to UiB's current drive to engage in an active advisory capacity towards government and international organisations; an activity also referred to as science diplomacy. The *Mare Nullius* project includes anthropological fieldwork in nearly all countries of the Pacific Islands region, but also in the diplomacy of the UN and at climate change summits.

“They contribute the least to global warming, yet are set to suffer the most from its effects. |

"My vision is to contribute to the building of new anthropological method and theory, for fieldwork-based studies of international political practice," Hviding explains.

"I have developed this project in dialogue not only with a network of research partners in many parts of the world, but also with the UN missions of the Pacific island nations. It is the UN ambassadors of the Pacific who handle many of the daily challenges to wider global recognition of the consequences of climate change for their countries. But in fact they engage in this fight on behalf of us all. My ambition is for *Mare Nul-*

lius to contribute to broader knowledge of how the Pacific island nations engage as state actors in global legal and diplomatic systems, and to providing the climate change challenges with a clearly humanist dimension grounded in Pacific islanders' own perspectives, hopes and ambitions."

A highly interdisciplinary project

Mare Nullius builds on interdisciplinary approaches developed in the EU-funded ECOPAS project coordinated by Hviding in 2012–2016, which included collaboration with climate scientists at UiB's Bjerknes Centre for Climate Research and the University of the South Pacific. Climate science is central to the new project too, and will be integrated with legal studies, political science and maritime global history.

"The project's basic agenda connects climate science and law to anthropology as the central, integrative discipline. I aim to develop what I see as a true interdisciplinarity, which includes the indigenous knowledges of Pacific islanders," Hviding explains.

One of the project objectives is to document the actual building of interdisciplinarity. *Mare Nullius* will offer PhD and postdoctoral positions in the participating disciplines.

"For the project's PhD and postdoctoral positions we aim for shared supervision across disciplines, as well as significant research time in the Pacific, in the UN system and in other forums where island nations fight for their sovereign territories," Hviding notes. The anthropologist sees the *Mare Nullius* project as a component of UiB's strategy for supporting the UN Sustainable Development Goals (SDGs). In this, he sees synergies also with the new Ocean Sustainability Centre, established by UiB in January 2018. ◦

>>> Professor Edvard Hviding leads the SDG Bergen Task Force, a strategic initiative by the University of Bergen. Read more on **page 27**

FACTS

Mare Nullius and Toppforsk

- The project's full title: *Mare Nullius? Sea-level Rise and Maritime Sovereignties in the Pacific – An Expanded Anthropology of Climate Change*.
- Five-year research project funded by the Research Council of Norway's Toppforsk programme.
- Principal investigator and project director is Professor Edvard Hviding.
- Interdisciplinary project that draws on social anthropology, climate science, law of the sea and sovereignty, political science, global history, etc.
- Leading scholars from three of the University of Bergen's faculties are involved. In addition to Hviding as PI, Professor Ernst Nordtveit from the Faculty of Law and Professor Noel Keenlyside from the Geophysical Institute are central participants.
- PhD candidates and postdoctoral fellows will be recruited at UiB, and there will be close cooperation with prominent international scholars, including visiting professorships at UiB.
- For the supervision of PhD candidates the project will develop new approaches to interdisciplinarity, combined with a strong disciplinary grounding.
- In addition to Hviding, Toppforsk funding was awarded to Professor Karsten Specht at the Department of Biological and Medical Psychology and Professor Michael Fellows at the Department of Informatics.



Edvard Hviding (right) in conversation with the Hon. John Maneniaru, Minister of Fisheries and Marine Resources, Solomon Islands. PHOTO: PACIFIC ISLANDS DEVELOPMENT FORUM

The cultural effects of Machine Vision

Jill Walker Rettberg's ERC funded project "Machine Vision" will explore what happens to us when we, increasingly, view the world around us through machines.

“The ERC funding makes it possible for me to build a team, and really work with the research. We research the cultural effects of a kind of technology which is key to our society,” says Rettberg, stating the importance of this kind of humanities in a world where technology is evolving very quickly.

Rettberg is a professor in Digital Culture at the University of Bergen and leader of the Digital Culture Research Group, at the Department of Linguistic, Literary and Aesthetic Studies, at the Faculty of Humanities. She has previously been awarded for her work with social media, recently receiving the John Lovas

Memorial Award for her Snapchat research stories.

Self-representation online

It was while she was working on her book on self-representation online that Jill Walker Rettberg began to develop the idea for her new ERC project, *Machine Vision in Everyday*

Life: Playful Interactions with Visual Technologies in Digital Art, Games, Narratives and Social Media.

Studying selfies, she realised that the ways we use visual technologies is changing, and that these changes are impacting us in very significant ways. Selfies are much more than just self-portraits. They are algorithm-

"All these are examples of everyday machine vision", Rettberg argues.

"The ubiquity of machine vision is a shift in representational technologies as vast as the introduction of the printing press, or of linear perspective, and will lead to as significant changes in our society".

Different perspectives

The project *Machine Vision* will explore machine vision from three perspectives. As a foundation, Rettberg and her team will study theories and histories of visual technologies and current machine vision. Then, three PhD students will analyse digital art, computer games and narratives (e.g. science fiction novels, movies or electronic literature) that use machine vision as theme or interface. Third, an ethnographer will examine the experiences of users and developers of consumer-grade machine vision apps through fieldwork and interviews.

Three main research questions are woven through all the approaches, addressing 1) new kinds of agency and subjectivity; 2) visual data as malleable; 3) values and biases.

The project will be hosted by the Digital Culture Research Group, and will work closely with the Electronic Literature Research Group at UiB. ◦

“We research the cultural effects of a kind of technology which is key to our society. |

mically encoded, manipulated by filters, and run through facial recognition algorithms. Holding a camera up to our face can now be a way of proving our identity so we can unlock our phone, or to get money from a bank account – or we might be photographed as a way of assessing our emotional state – for security reasons, to sell us something or simply to personalize a service. Our phones run each image we take through image recognition algorithms to sort and tag our photos.

Three out of five grants to UiB

Out of five ERC Consolidator Grants to Norwegian projects this year, three were awarded to UiB-researchers.



PHOTO: KINE ANDRÆSSEN

In addition to Rettberg, Professor **Thomas Arnesen**, Department of Biomedicine/ Department of Molecular Biology and leader of the Arnesen lab, was awarded the grant for his project “*Discovery and functional significance of posttranslational N-terminal acetylation*”.

The project will explore new systems of cellular regulation of proteins, with potential effects in hormone-regulation and cancer.

“It’s fantastic and unreal to get a breakthrough after many years of work,” says Arnesen, pointing out that this is the first Norwegian ERC supported project in the category “Life Sciences 1” – Molecular and Structural Biology and Biochemistry.

“This is mainly the result of a team effort from the entire research group, thanks to everyone that has contributed”.



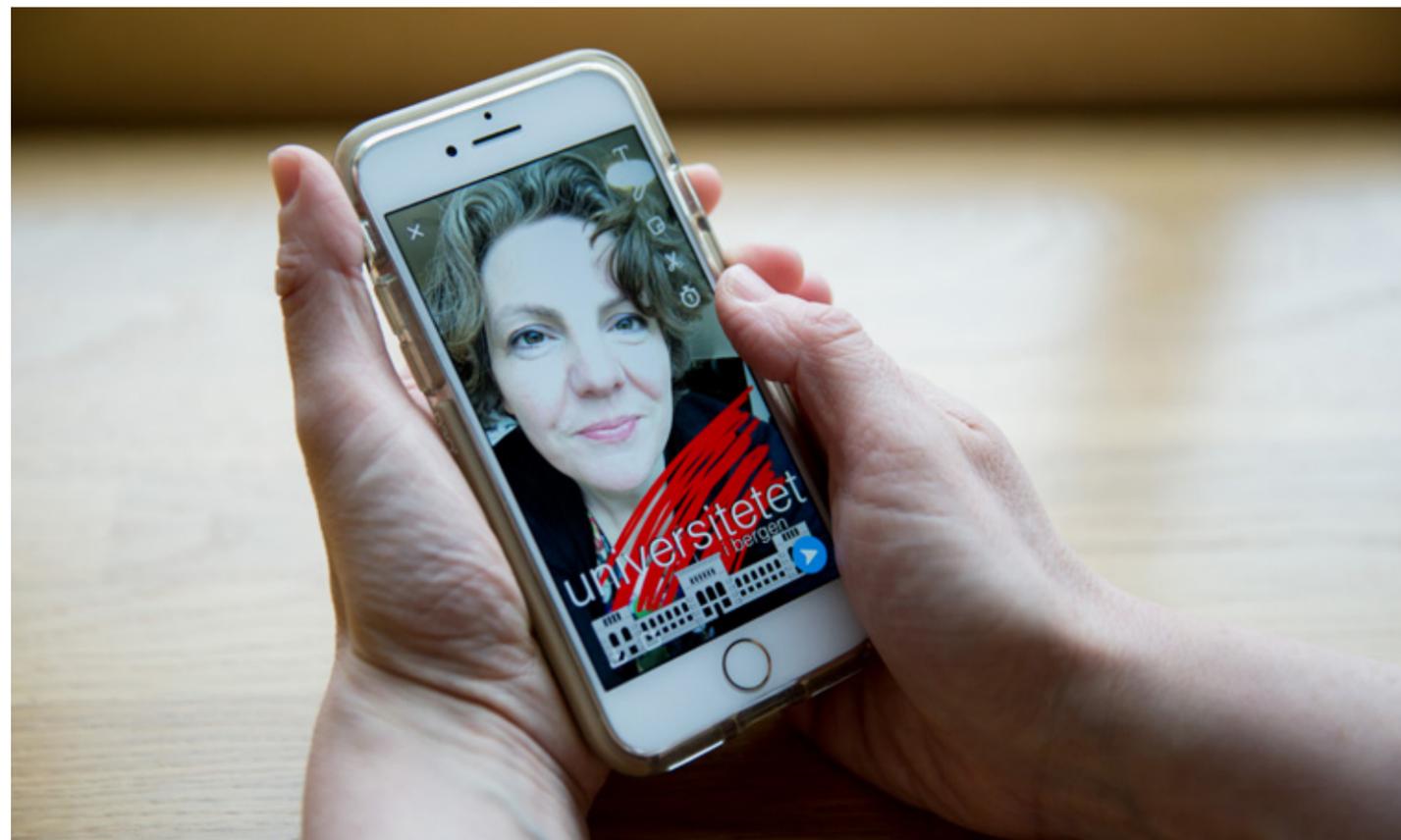
PHOTO: OXFORD.NO

Professor in meteorology **Harald Sodemann** at the Geophysical Institute and the Bjerknes Centre for Climate Research also got the Consolidator Grant for the project “*Isotopic links to atmospheric water’s sources*”.

“Together with recent technological advances in isotope measurements and in-situ sample collection, this will allow us to acquire a new kind of observational data set that will follow the history of water vapour from source to sink”, Sodemann explains in the project abstract, and continues:

“In ISLAS, my team and I will make unprecedented use of stable isotopes to provide the sought-after constraints for an improved understanding of the hydrological cycle in nature and in climate models, leading towards improved predictions of future climate”.

A central part of the project is use of research aircrafts to measure the water cycle in the Norwegian Sea.



◀ With the ERC Consolidator Grant, Jill Walker Rettberg will study Machine Vision in everyday life. The project launches in August 2018, and runs for five years. PHOTO: EIVIND SENNESET

Asthma medicine halves risk of Parkinson's

Using data gathered from 100 million Norwegian prescriptions, researchers at the University of Bergen have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

By studying the effect of 1,000 medicines, researchers discovered that medicine against asthma and blood pressure is linked to the risk of getting Parkinson's disease. While the use of asthma medicine halves the risk of getting Parkinson's, one type of medicine against high blood pressure doubles the risk.

The researchers examined more than 100 million prescriptions ordered over the last 11 years in Norway.

"These discoveries could be the start of a radically new treatment of Parkinson's patients", says Professor Trond Riise at Department of Global Public Health and Primary Care (IGS), University of Bergen (UiB).

Destroys the brain cells

Parkinson's disease is a chronic disease with unknown causes. The disease destroys the brain cells that control body movements. Shivering, stiff arms and legs and poor coordination are typical symptoms of Parkinson's. The symptoms may develop slowly, and it sometimes takes time to make a correct diagnosis.

Researchers at IGS have completed a large study that included data from the Norwegian Prescription Database, in cooperation with re-

searchers at Harvard University.

"Our analysis of data from the whole Norwegian population has been decisive for the conclusion in this study," says Riise. He leads the registry study in Norway.

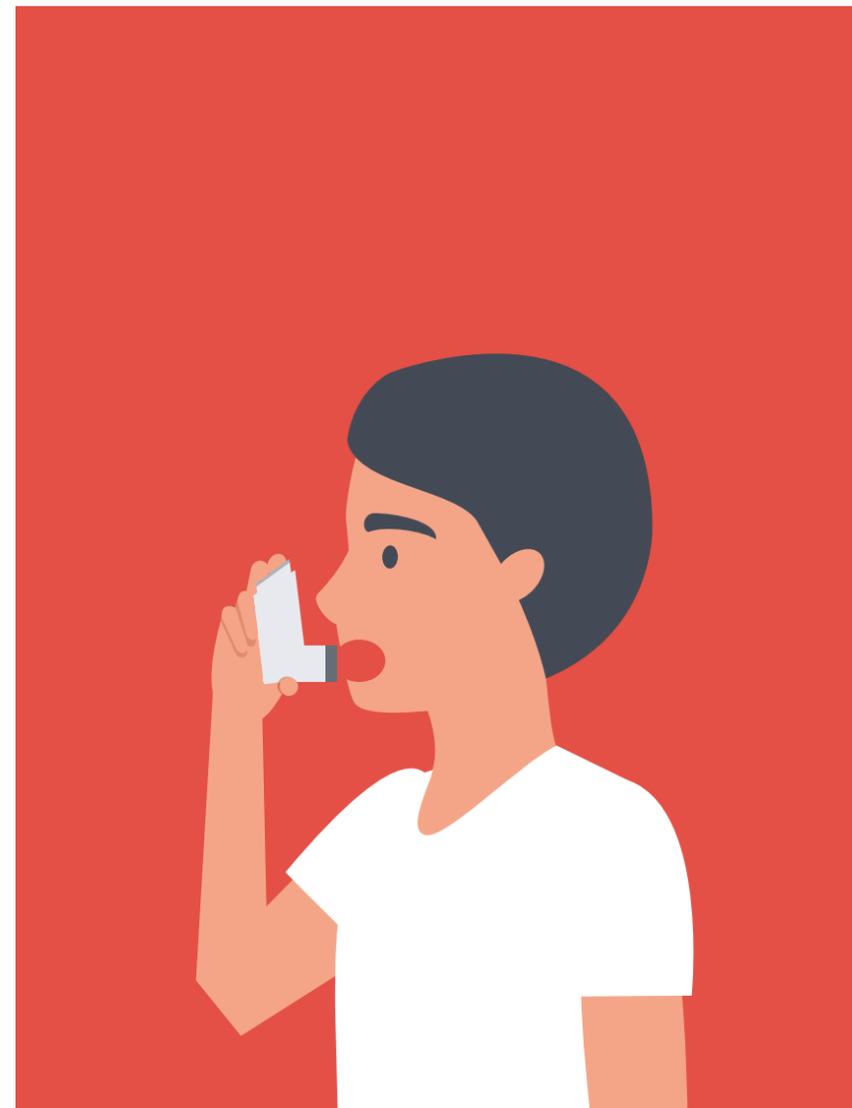
The study is published in Science.

100 million prescriptions

Together with colleagues Anders Engeland and Kjetil Bjørnevik, Riise has analysed more than 100 million Norwegian prescriptions registered since 2004.

In the study, the treatment of Parkinson's was linked to prescriptions of asthma medicine and the medicine for high blood pressure. It enabled the researchers to see the connection between medicine use and illness.

The UiB-researchers were able to make these comparisons by using the prescription database. The Norwegian analysis was done after re-



Asthma medicine has positive side effects, a study from the University of Bergen shows. ILLUSTRATION: ISTOCKPHOTO

searchers at Harvard University found these effects of the medicines in animal tests and in experiments with brain cells in the lab. Their results showed that these different medicines had opposite effects on the risk of Parkinson's.

Possible new treatment

To find out if these medicines had the same effect on humans, the researchers at Harvard University started to collaborate with the Norwegian research team, and their unique resource of having access to the unique and large Norwegian

database, where all Norwegian prescriptions are registered.

"We analysed the whole Norwegian population and found the same results as in the animal testing at Harvard University. These medicines have never been studied in relation to Parkinson's disease," says Riise.

Trond Riise underlines the fact that "Our discoveries may be the start of a totally new possible treatment for this serious disease. We expect that clinical studies will follow these discoveries." ◦

“ Our discoveries may be the start of a totally new possible treatment for this serious disease. |

FACTS

Parkinson's Disease

- More than 10 million people worldwide are living with PD.
- Incidence of Parkinson's disease increases with age, but an estimated four percent of people with PD are diagnosed before age 50.
- Men are 1.5 times more likely to have Parkinson's disease than women.
- There is no "one way" to diagnose Parkinson's disease (PD). However, there are various symptoms and diagnostic tests used in combination. Two of the four main symptoms must be present over a period of time for a neurologist to consider a PD diagnosis:
 - Shaking or tremor
 - Slowness of movement, called bradykinesia
 - Stiffness or rigidity of the arms, legs or trunk
 - Trouble with balance and possible falls, also called postural instability
- There are many medications available to treat the Parkinson's symptoms, although none yet that reverse the effects of the disease.

Source: The Parkinson's Foundation



Trond Riise and his research team's discoveries may lead to a breakthrough in treating Parkinson's disease. PHOTO: KIM E. ANDREASSEN

A new view of evolution

Andreas Hejnlol believes the new finds will change the field of evolutionary biology. PHOTO: EIVIND SENNESET

New discoveries from the University of Bergen can knock a hundred years old hypothesis on the evolution of the nervous system off its perch.

In evolutionary developmental biology, inversion is a hypothesis that states that during the course of animal evolution, the structures along the dorsoventral axis have taken on an orientation opposite that of the ancestral form, moving to the belly to the back of the animals. More than 100 years ago, German zoologist Anton Dohrn suggested that both insects and mammals must have one common ancestor with a nervous system similar to the human spinal cord.

In the past years, researchers have

debated how the nervous system evolved in mammals, and the hypothesis of inversion has been disputed, but has arisen time and time again. Yet it has remained unclear when and how nerve cords originated during the evolution.

Now, a paper published in Nature, puts this issue to rest once and for all: studying several different animals (Xenacoelomorpha, Rotifera, Nematoda, Brachiopoda, and Annelida) show that they have developed nerve cords independent of each other. The

research project has been headed by Andreas Hejnlol, researcher at the Sars International Centre for Marine Molecular Biology at the University of Bergen, and a team of international researchers.

Flipping humans

"A feature of the inversion hypothesis is that one of the ancestors of humans must have flipped, an inversion of the entire body. In 1994, scientists found that a common gene cascade is responsible for the con-

densation of the nervous system, which is used as evidence that nerve cords in animals as diverse as flies and humans have a common ancestry. We wanted to look closer at this," says Andreas Hejnlol, researcher at the Sars International Centre for Marine Molecular Biology at the University of Bergen. Hejnlol has headed the investigation, which concludes seven years of research.

By collecting or cultivating nine species of animals, the scientists were able to build a very strong case against the older hypothesis of inversion.

"We found that the molecular patterns could not explain how the nervous system has developed. They have been used before as evidence that both humans and flies had a common

ancestor with a prominent nerve cord. Our findings prove this hypothesis to be invalid, as well as the hypothesis of inversion" Hejnlol says.

Understanding the nervous system

Until now, it has been believed that the early origin of the vertebrate nervous system was about 600 million years ago.

"Our finds place the origin at a much later time, around 100 to 200 million years later. Where this happened in the tree of life is important for researchers to know," the research group leader says.

He explains that the article in Nature and the finds published there will make it easier to explain how the nervous systems has evolved in animals.

"Our rejection of the common ancestor makes it easier to understand that the nervous system in animals has developed in multitudes of ways."

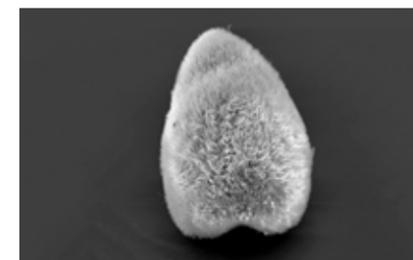
Changing the field

He believes the finds will change the field of evolutionary biology.

"The researchers who have believed in the hypothesis of inversion will be shocked, and sad, perhaps. The majority of the researchers in the field will be happy, on the other hand. The hypothesis has been disputed, but our article is strong enough to put it to rest," Hejnlol says.

Hejnlol, who received an ERC Consolidator Grant in 2015, has been main author of several articles and papers shedding light on evolution, all of them published in highly rated scientific journals.

"My approach is to look closer at one organ system after another, we want to learn more and check ruling hypotheses. My next project is blood, and how it has been evolved," Hejnlol concludes. ◦



SPECIMEN SAMPLES: A scanning electron image of a young acoel worm. "It looks like a tribble from Star Trek but is much smaller, only 150 micrometers. We look at the frontend - the face - where at the most anterior tip the gland and sensory cells are positioned," Hejnlol explains. PHOTO: THE SARS INTERNATIONAL CENTRE FOR MARINE MOLECULAR BIOLOGY



PREDATOR WORM: "The Lineus ruber: Its an adult ribbon worm, Nemertean in latin. Its length is about 7 cm and from the rocky shore close to Bergen. They are dangerous predators - not for humans, but for other worms," Hejnlol explains. PHOTO: THE SARS INTERNATIONAL CENTRE FOR MARINE MOLECULAR BIOLOGY



COLLECTING SAMPLES: The research published in Nature examined nine different species, collected from all over the world. PHOTO: EIVIND SENNESET



THE TEAM: Kevin Pang, Jose-Maria Martin Duran, Andreas Hejnlol, Anlaug Furu and Aina Børve. PHOTO: WEI DENG



Small electrical shocks give healthier brains

Controversial electrotherapy has been replaced with small electrical impulses to the brain. This can help patients with depression, stroke and brain tumours.

Can stimulating the brain using an electric current help patients with different conditions? Researchers believe it could have positive effects on some conditions, and they already have interesting results. This involves stimulating the brain with tiny electrical impulses in low-current therapy. But how and why does it work?

Researcher Marco André Hirnstein uses the brain stimulating devices to treat stroke or depression. Conditions that affects very many people. The devices are also used to treat people who hear voices, such as patients with schizophrenia. In addition, the researcher helps sur-

geons at Haukeland University Hospital in Bergen in preparation for operations on brain tumours.

"It is highly satisfying to be a researcher and to be able to apply basic research directly in the treatment of patients," says a dedicated Hirnstein.

Helps people with depression

Unfortunately, however, electrical brain stimulation still does not work for everyone. For example, even though it can be effective for many patients with depression, it may have little effect on other patients with the same condition.

"We need to do more research on this," comments Hirnstein.

He refers to other researchers who have found that the treatment is effective for two-thirds of the patients. For one third of the patients the treatment gave good long-term effects, while another third required a "top-up". The last third experienced no effect at all. Thus, the treatment has different effects on different people, even if they have the same diagnosis. It is therefore particularly important for the researchers to find out why this is so, and how electrical brain stimulation affects the various psychological and neurological conditions.

Hirnstein works and conducts research at the Department of Biol-

ogy and Medical Psychology, Faculty of Psychology, University of Bergen, and collaborates closely with the academic departments at Haukeland University Hospital. He is involved in several of the projects under the auspices of the research group for Functional magnetic resonance imaging (fMRI), which is headed by Professor Karsten Specht.

...not Jack Nicholson

There is a whole arsenal of methods that use an electric current to stimulate the brain.

"But don't think of Jack Nicholson's rebellion against the treatment in *One Flew Over the Cuckoo's Nest*".

That type of treatment is now only used for severe depression and only under a general anaesthetic. Hirnstein and his colleagues use a much weaker electric current that only affects one specific, small area in the brain. The current is about the same as that in a small battery, and it is not painful. The patient does not need an anaesthetic, and does not even notice it.

"Using these methods, we can "modulate" the selected area so that something in the brain is changed. Then we can help those who do not benefit from medication, as is the case for some patients with depression," continues Hirnstein.

A brain with two halves

Hirnstein started this research because he was curious as to why our two brain hemispheres are so specialized. He explains that the left hemisphere controls our ability to write and to speak, while the right governs our ability to understand spatiality and to navigate.

"We discovered that using electrical brain stimulation we could distinguish between the two hemispheres. It is actually a very convenient method to "reset" one half. That was when I became even more interested in the field. We can use the method to diagnose, treat and conduct research,"

comments Hirnstein, who also collaborates with the neurologist Tom Eichele in this field.

Targeting the correct area

If a tumour is located in the part of the brain that controls movement, surgeons must be certain when they operate that they know the location of the tumour as accurately as possible. This means the patient can avoid injury or paralysis. When Hirnstein has determined where the tumour is located and what surrounds it, the surgeon can feel more secure that he will hit the target correctly. By using electrical brain stimulation Hirnstein maps the precise areas that controls body movements. And with this method you don't have to open up the skull. This information is then sent to the neurosurgeons.

"We determine which part of the body is controlled by precisely this area of the brain".

The location of the area associated with a particular function of the body varies from person to person. The surgeon also performs his own tests during the operation, when the skull is open.

"This means that the accuracy increases for these extremely demanding operations," says Hirnstein.

Re-finding words

Hirnstein uses a method called transcranial magnetic stimulation (TMS) to make the measurements with his device. When the researcher places the device on the head and presses the button, the brain receives a very mild form of electrical stimulation.

About 12,000 people in Norway have a stroke every year, and about a third of them subsequently have problems speaking (aphasia). This method can help patients with stroke to regain speech.

"Some studies show that the patients who receive this treatment benefit more from language therapy," states Hirnstein.

Using TMS together with speech

therapy is completely new in Norway and researchers need to find out more about this treatment. Therefore, together with colleagues Karsten Specht and Eike Wehling, he wants to introduce TMS also in Norway. The treatment is time consuming for the patient and researcher, and the outcome is still uncertain for some of these patients. Hirnstein explains that there are two ways to do this: Either stimulate the area around the part that is damaged, as our language centre is located in the left hemisphere, or attempt to dampen activity in the right hemisphere because this part of the brain will often strive to compensate for the injury.

Not a cure for everything

"Electrical brain stimulation using a weak electric current is without doubt very beneficial in many disciplines. But we must also be clear that this is not a miracle therapy for all disorders," states Hirnstein.

Researchers still does not know enough about what exactly happens in the brain during treatment with weak electric current. Moreover, studies that use this method often have too few participants. That makes it difficult for the researchers to determine for whom this therapy will work.

"There is therefore still a lot that needs to be researched in this area in the future," concludes Hirnstein enthusiastically. ◊



Marco André Hirnstein.
PHOTO: EIVIND SENNESET

Household cleaning can be as bad as smoking for lung function

Cleaners who have regularly used cleaning sprays over 20 years were found to have reduced lung function equivalent to smoking 20 cigarettes a day over the same period, a UiB-study shows.

“People who have worked as cleaners or done household cleaning for 20 years have reduced lung function equivalent to smoking 20 cigarettes a day, for the same period of time,” says PhD candidate Øistein Svanes, at the Department of Clinical Science, at the Uni-

versity of Bergen. He is main author of the study.

Bad for lungs

He says his findings might not be surprising, when thinking about all the small particles that follow with cleaning products.

The study also shows that cleaners have 40 per cent higher risk of developing asthma than others.

The research includes 6,000 participants, based on the European Community Respiratory Health Survey (ECRHS).

The study is published by the American Journal of Respiratory and Critical Care Medicine, and is part of the Horizon 2020 project Aging Lungs in European Cohorts (ALEC).

“Use water bucket”

Professor Cecilie Svanes at the Department of Global Public Health and Primary Care, UiB, supervisor of the study, says the cleaning sprays are the main problem.

“The small particles from the sprays can remain in the air for hours after cleaning. The small particles can travel deep into the lungs and cause infections, and ageing of the lungs,” Svanes explains.

“I would recommend using a bucket of water and soap when cleaning. You will not need a lot of chemicals after all, when cleaning. Micro-fibre cloths may be just as effective,” Cecile Svanes points out. ◦



Hunting mystery lightning from space

Thunderstorms on earth are spectacular, yet what we can see from here is only the beginning. For the first time scientists are now reaching into space, aiming to crack the mysteries of a strange electrical phenomena that occur above thunderstorms. ►►

2nd of April 2018 was a historic day for the University of Bergen. After 14 years of planning, developing and building, technology from the Birkeland Centre for Space Science (BCSS) was to be launched into space. Its mission; to learn what happens in the atmosphere when lightning strikes earth.

Launched to the International Space Station, the instruments from the University of Bergen are the first built to observe gamma ray flashes in thunderstorms. These flashes weren't discovered until 1994, and are still largely unknown – which is why there is great excitement linked to the results of this pioneer research.

Much at stake

The great excitement is accompanied with great expectations. And some nerves. To see the SpaceX-rocket well

off, a small group of engineers and scientists traveled from Bergen to Florida to observe the launch from Cape Canaveral.

“This is like our baby. We have invested so much time, effort and energy in this. It’s been sweat and tears. Finally we get to see the instruments we’ve developed being sent into orbit, but let’s keep our fingers crossed, there is still a lot that could go wrong”, says senior engineer Georgi Genov and Professor Kjetil Ullaland, excited and nervous a few hours before the launch.

Their “baby” have a rough time ahead. First a launch that will take it from earth into orbit in ten minutes, exposing the payload of scientific equipment to extreme G-forces and temperatures. The Dragon capsule carrying the instruments is placed in the very tip of the rocket. The next

step is connecting the capsule to the International Space Station (ISS), orbiting Earth at a speed of 27,000 km/h. Then a robotic arm is to lift the instruments of the size of a washing machine onto its place and mount it outside the ISS.

“But the real test for us is actually a few days later. Then the switch is turned on, and we will see if what we’ve used 14 years to build actually works”, says Georgi, well aware this prestigious project is the largest and most expensive any Norwegian university has ever done on space science.

Countdown

Around T-minus 5 minutes the small talk dwindles away at the observation point at the NASA-facility. Waiting to watch the launch from the front row are scientists and engineers from

several international universities. The instruments from Bergen are part of ASIM (The Atmosphere-Space Interaction Monitor), an advanced instrument package built to measure electrical discharges. The main contractor for ESA is Terma, and the development of ASIM has been a collaboration between multiple European companies and universities.

Three, two, one. Ignition! As the rocket carrying a broad range of science equipment roars into the sky, the representatives from the different nations contributing breaks into a load cheer. The launch is a success.

First results

Back in Norway a few weeks later, the scientists and engineers of the Birkeland Centre are relieved. Everything seems to have gone as planned.

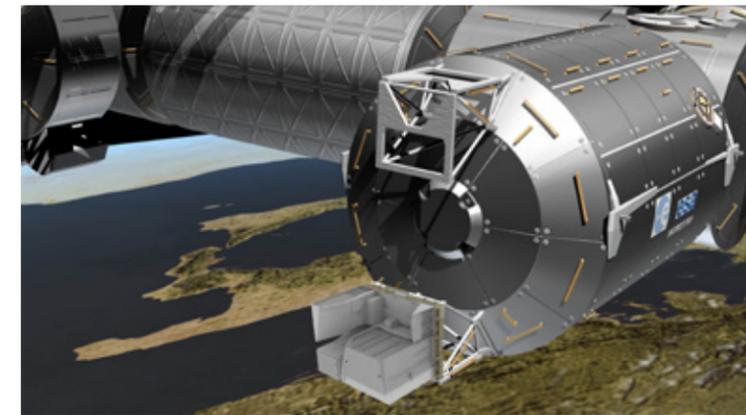
“Everything is working and we are now receiving the first data from ASIM. We are entering the commissioning phase, trying to understand and calibrate the data we are getting”, says Professor Nikolai Østgaard, head of the Birkeland Centre.

With everything up and running he is presuming they will get data from 1,000 gamma ray flashes a year, giving them a good foundation for mapping the phenomenon for the first time.

“At this time, we don’t know the importance of the flashes, but we will measure the quantity and strength of the flashes, as well as analyzing how the processes are connected. Later we might be able to understand how the flashes influence the Earth’s atmosphere”.



BCSS leader Nikolai Østgaard and UiB Rector Dag Rune Olsen watches the launch with excitement. PHOTO: OLAF ERLEND GUNDERSEN



LEFT: The ASIM-instrument on the Columbus-module at ISS. ILLUSTRATION: TERMA



BOTTOM: The Norwegian ASIM-delegation before launch at Cape Canaveral, Florida. To the left UiB Rector Dag Rune Olsen, followed by Centre Leader Nikolai Østgaard, Senior Exec. Consultant at BCSS Kavitha Østgaard, Senior Manager at the Norwegian Space Centre Marianne Vinje Tantillo, Monica Ullaland, BCSS Professor Kjetil Ullaland and CEO at IDEAS Gunnar Maehlum. Sitting in the front is Senior Engineer at BCSS, Georgi Genov. PHOTO: OLAF ERLEND GUNDERSEN

FACTS

The Birkeland Centre for Space Science

- The Birkeland Centre for Space Science (BCSS) is a Norwegian Centre of Excellence (SFF) whose primary objective is to try to understand the Earth's relationship to space.
- Norwegian name: Birkelandsenteret for romforskning.
- Centre leader is Professor Nikolai Østgaard.
- Started in March 2013, at the Department of Physics and Technology, Faculty of Mathematics and Natural Sciences, University of Bergen.
- Amongst other things, the research lay a foundation for better forecast of space weather, used to increase safety for GPS signals, TV signals, payment systems and other satellite-based information systems.



Fighting child mortality in Uganda

Researcher Victoria Nankabirwa is leading two research projects that aim to reduce child mortality in Uganda.

Every year, in low- and middle-income countries, as many as 6 million children die before their 5th birthday. In addition, 300,000 mothers also die.

"Most of these mothers and children die from diseases, which are usually easy to cure and can be prevented by simple means in the rich parts of the world," says Professor Victoria Nankabirwa, at Makerere University (MU) and University of Bergen (UiB). She is currently leading

two projects at Centre for Intervention Science in Maternal and Child Health (CISMAC). The centre is a Norwegian Centre of Excellence (SFF) at the Faculty of Medicine, UiB.

In the projects, she is testing and comparing non-complex interventions, with the aim of reducing child mortality in Uganda. The results may have impacts globally.

Cleansing the umbilical cord

In one of the projects, Nankabirwa is

testing the use of the antiseptic Chlorhexidine for cleaning newborn umbilical cords. As many as 98 per cent of the 3 million yearly deaths within the first 28 days of a child's life occur in low- and middle-income countries.

"A third of these deaths are related to various infections, and infection of the umbilical cord accounts for a large part of these," Nankabirwa explains.

Entrance for infection

After the umbilical cord is cut after

birth, the remaining cord stump dries up and falls off within 5 to 15 days. In this period, however, the stump is dead tissue and acts as an easy entry point for microorganisms, which may cause an infection in the child.

To avoid such infections, several interventions have been recommended. One of the most promising ones, according to Nankabirwa, is cleansing with Chlorhexidine.

The World Health Organization (WHO), recommend such cleansing of children born at home, but not for those born at health centres or hospitals. For those children, soap and water is enough.

"This advice lacks scientific proof. One of the problems is that the mother and child travel home to less hygienic condition, right after giving birth at the health station," Nankabirwa explains.

The Chlorhexidine project conducted by Nankabirwa seeks to test the effect of using Chlorhexidine at health stations. As many as 4,760 children will participate in the project, which is partly funded through the GLOBVAC-programme of The Research Council of Norway.

BCG-vaccine and immune response

In the other CISMAC-project, Nankabirwa is testing the BCG-vaccine's

effect on new-borns.

"Some research indicates that the BCG-vaccine has some positive side effects in addition to preventing tuberculosis. It seems it has an immune boosting effect, and can reduce infections, such as HIV-infection from mother to child", Nankabirwa says.

The optimal vaccination time

Nankabirwa and her team of researchers are trying to identify the best timing for giving the vaccine.

"A few earlier studies indicate that it could be better to wait a couple of weeks rather than giving it right after birth", says Nankabirwa.

In the study, the participants are divided in two groups. One of the new-born groups receive BCG-vaccine within 24 hour after birth, and the other group is given the vaccine after 14 weeks.

As many as 2,200 newborn babies participates in the project, which is being conducted at three different health facilities in Uganda. ◦

FACTS

Chlorhexidine study

- The project includes 4,760 children. Most of its funding support comes from the GLOBVAC-programme of The Research Council of Norway.

- The project is lead by Victoria Nankabirwa (MU/UiB) and Halvor Sommerfelt (UiB).

- Members of the research team are: Grace Ndeezi (MU), James K. Tumwine (MU), Thorkild Tylleskär (UiB), Usha Dhingra (Centre for Public Health Kinetics) and PhD candidates Josephine Tumuhameye (UiB/MU) and David Mukunya (UiB/MU).

BCG study

- The study is lead by Victoria Nankabirwa (MU/UiB) and Halvor Sommerfelt (UiB).

- Member of the research team are: Grace Ndeezi (MU), James K. Tumwine (MU), Thorkild Tylleskär (UiB) and PhD candidate Olive Namugga (MU/UiB).



Victoria Nankabirwa is leading two research projects in Uganda. PHOTO: KIM E. ANDREASSEN

Centres of Excellence

A programme funded by the Research Council of Norway that gives Norway's best scientists long-term funding and thus the opportunity to generate ground-breaking results that advance the international research frontier. In October, UiB opened a new Centre of Excellence at the Faculty of Humanities. **The Centre for Early Sapiens Behaviour (SapienCE)** brings together archaeologists, zoo-archaeologists, micromorphologists, palaeoclimatologists, climate dynamicists, dating experts, social scientists, cognitive and neuroscientists, geneticists, to say something fundamental about what it means to be human.

Three archeological sites near Cape Town in South Africa will be excavated at the new SFF-centre. At these sites, traces of settlements can be found, stretching from 50,000 years to 100,000 years ago.

"In the coming years we will make great progress in understanding our common past", says UiB Professor Christopher Henshilwood, director of SapienCE.

Centre for Cancer Biomarkers (CCBIO) is a Centre of Excellence at the Faculty of Medicine. Researchers at the centre are working on new cancer biomarkers and targeted therapy. Particular focus lie on mechanisms that show how cancer cells are affected by the microenvironment in the tumors, and what significance this has for cancer proliferation and poor prognosis.

When the Norwegian Cancer Society announced their 2017-funding, researchers at The University of Bergen and Haukeland University Hospital received 54,7 million NOK, of which 23,2 million go to three CCBIO-projects. James Lorens' project concerns new methods to provide better treatment of aggressive cancer that is resistant to immunotherapy, Camilla Krakstad's project is investigating tumor alterations, and aims to provide more personalized treatment and Bjørn Tore Gjertsen's project aims to achieve effective precision therapy by linking disease models, diagnostics and treatment closer together.

Centre Director Lars A. Akslen and his team are now halfway through their SFF-period.

Centre for Geobiology (CGB) ended its successful ten-year SFF-period in 2017. Under leadership by Rolf Birger Pedersen and Ingunn Hindenes Thorseth (from 2014) the centre, placed at the Faculty of Mathematics and Natural Sciences, developed new fundamental knowledge about the interaction between the geosphere and biosphere - and the roots of life.

As CGB ended its run, the K.G. Jebsen Centre for Deep Sea Research (JC-DeepSea) was established. Director is the former CGB-leader Rolf Birger Pedersen.

JC-DeepSea aims to be a leading international centre for deep sea research, building on the model and research of Centre for Geobiology. They are still pursuing both fundamental and applied research questions, making the successful transition from a Centre of Excellence to a new centre with groundbreaking research.

Understanding the data that surrounds us

Digital traces are all around us. At SLATE, researchers work to understand digital data, and to put it to use for new ways of understanding and supporting learning.



“We collect and analyse data generated from learning while it happens, in order to understand different aspects of the learner, learning, and learning environments. The results are visualized for learners and teachers”, says SLATE director Barbara Wasson.

Efficient learning

Centre for the Science of Learning & Technology (SLATE) is a national centre contributing to international research and national competence development on the use of data and data approaches (learning analytics) in education and lifetime learning. An important focus is on creative and innovative thinking that addresses the challenges with learning and work in an unknown future. This research is led by postdoc Ingunn Johanne Ness who has carried out extensive research on multidisciplinary teams working with innovation. SLATE is located within the Faculty of Psychology at UiB, but draws together researchers from multiple faculties and disciplines.

The research can also yield great benefits in professional training situations. For instance, as one of the partners in the FINNUT-funded iComPass-project, re-

searchers and students at SLATE work with the fire brigade in Sotra, west of Bergen, to develop new tools to help fire fighters maintain an overview of the competences of individual fire fighters, teams, and the brigade as a whole, and to identify competence gaps where training efforts should be focused. Collecting, analysing and using such data is addressed by researcher Cecilie Hansen, who has worked on this project for three years.

New technology can save lives

When time is of the essence, being able to search a building as quickly as possible can be the difference between life and death. Two SLATE Masters students are developing visualisations of the routes that fire fighters take after entering a burning building. This provides useful insights for instructors and fire fighters for sharpening their skills and perfecting their search technique.

Surrounded by data

“There is digital data all around us”, says Wasson, “but this data is often not used to inform everyday practices”.

By systematically collecting, analyzing and visualizing data generated by digital tools used in learning situations, SLATE’s input can empower teachers/instructors, students, school leaders, policy makers etc., to make informed decisions about learning and education.

“The data tells a story. However, it needs interpretation. At SLATE, we help understand the data. In one project, we work with a Norwegian upper secondary school, to pinpoint areas where pupils need guidance. This helps the teacher facilitate an indi-

vidual learning process towards each student”, she says, underlining the importance of following clear ethical guidelines and laws when using personal data in research.

Interdisciplinary

A recent case study review of Interdisciplinary research in Norway, commissioned by the Research Council of Norway from the Technopolis Group, concludes that SLATE is combining research from a variety of disciplines to address the pressing education-related questions in Norway today. The conclusion is encouraging for the SLATE team regarding the work done so far, and inspiring for the time to come:

“SLATE has created an inclusive, creative interdisciplinary environment with a culture of team work and open-mindedness: a platform for researchers from different disciplines to meet, set up new projects, and produce joint publications.” ◊

FACTS

Centre for the Science of Learning & Technology (SLATE)

- Established in 2016, after being awarded funding from the Norwegian Ministry of Education and Research.
- SLATE carry out research of high quality on learning analysis, which is the study of the use of data and data analytics for understanding and improving learning, teaching, and education, and covers, among others, the research fields of Learning Analytics and Knowledge, Educational Data Mining, and Big Data in Education.

Studying at the heart of the industry in Media City Bergen



Six new study programmes aim to provide media students with the theoretical and practical competence to master the media landscape of the future. ►►

“Lights off, on – quickly. Where is the backlight? What do you think? A little flat? Should we adjust? There you go, well done, you got it!”

Students at the new bachelor programme in TV-production are attending a course in light setting in one of the studios in Media City Bergen with teacher Zulfikar Fahmy.

In the middle of the room a student is sitting in front of a large TV screen, fellow students gather around her, controlling the camera, headlight, backlight. Fahmy is giving instructions, asking the students to use filters and back plates. Every small adjustment creates a different expression in the student projected on the large screen.

“Now, try an orange filter, do you have a smaller one? Pinch there – bravo! Open the lens, blender down – now we’re talking.”

A practical approach

From the new facilities in Media City Bergen, the University of Bergen now offers six new studies – three bachelor’s programmes and three master’s programmes – in journalism, television production and media and interaction design. Here, about 200 students are studying alongside industry companies like NRK, BA, TV2, BT and Vizrt.

The co-location of media companies, technology companies, research and education makes the media cluster unique.

Students get access to the latest technical equipment, and learn to use the tools the industry is using. They will also help develop new tools and solutions for the media industry. All study programmes are practically oriented and includes collaboration with, and practice at, the cluster companies.

“This approach characterizes the entire study programme”, says Marie Therese Norekvål Hayes, student at the light course.

“It is a very technically focused study, where we use the latest equipment used by the industry. From day one we’ve had it in our hands and learned how to use it.”

“The organization of the study programme in MCB provides us with an expertise no media students have had before us.”

The students should have their hands on the camera, touch the light, perhaps get a small burn, get a feel for it by using the equipment. They all get experience with the different roles of a TV-production: working the camera, controlling the light, the sound, directing and producing.



Ole Martin Eide Røssland works in the newspaper BA alongside journalism studies at UiB. PHOTO: EVIND SENNESET

“This is one of the reasons why I chose UiB. The study programme provides us with flexibility, and prepares us for professional life. You should be able to work on a movie set, with documentaries, news stories. You should be versatile, no matter where you end up”, says Hayes.

In the studio, a blue filter is placed on one of the lights, and the student on the screen looks like she is bathed in moonlight. The others whistle Rue’s whistle from The Hunger Games and laugh. Teacher Zulfikar Fahmy steers on steadily.

“Blender up, please, thank you – a bit more. There you have it. Lovely! Some would say this doesn’t look completely realistic, but who in Hollywood could make this setting completely natural? Let’s dim the lights a bit. There, what do you think?”

Close to the media industry

The new study programmes in Media City Bergen will provide students with the skills needed to master a radically changed media landscape.

The rapid changes and the labor market is obviously something you think about as a media student, says Ellen Eriksen who is studying her first year on the bachelor’s programme in journalism in MCB.

“We talk a lot about this, since the labor market is a difficult one. But I believe the

education provides us with a very good starting point, and that we have an advantage with the education being placed here in the media cluster. At the same time, I think it’s decisive to take responsibility, be curious and get involved, for instance in the student radio or newspaper, to get even more practical experience”.

Studying close to work

Another student who benefit from six of UiB’s media education programmes being located in the media cluster, is Ole Martin Eide Røssland. He studies last year at the bachelor’s programme in journalism, and works as a temporary employee in the newspaper BA.

While the students editing room, computer lab and audio studio are located on the second floor, BA is located on the third floor – just one staircase up.

“It makes it easy to move from studies to job, and to combine them”, says Røssland.

Students in Media City Bergen benefit from the co-location in several ways. During the course of study, they will get practical experience from the cluster partners, and people working in the industry are on a

regular basis hired for workshops and seminars.

Having the study programmes located in the same building as editorial media and technology industry, has made project collaboration easier. One important part of UiB’s commitment to Media City Bergen is to create digital tools and solutions for the media industry. For instance, the media and interaction design students will develop proposals for solutions to technology challenges they experience during their practice in the cluster businesses.

The informal meeting venues also provide good opportunities for students to get in contact with media and technology companies.

“The location in Media City Bergen was important when I applied for UiB. I am surrounded by journalists, and that is very motivating. I can walk past and look at NRK’s radio studios, and that is in itself very inspiring”, says Eriksen.

“The organization of the study programmes in MCB provides us with an expertise no media students have had before us. It will be very exciting to see how it’s received in the working life”.



The students get practical experience with all the roles of a TV-production. PHOTO: EVIND SENNESET

Cooperation in MCB

After years of planning, Media City Bergen opened in November 2017. The university has moved in with around 250 students and employees, under the same roof as innovative companies like TV2, NRK, Bergens Tidende, Bergensavisen, Vizrt and IBM.

“This makes the distance shorter between academia and the industry. It’s clearly a benefit for the companies to get to know the students, and the other way around”, says Anne Jacobsen, director for NCE Media and leader of the media cluster.

Around 50 cooperative projects has started up following the opening. UiB is involved in numerous:

- The leading graphics/visual storytelling company Vizrt and UiB cooperates to make tools for online video editing. The project is supported by The Research Council of Norway.
- IBM and UiB cooperates to develop technological solutions. Access to the IBM supercomputer Watson; combining artificial intelligence and analytical software, is part of the deal, making the technology available for UiB-platforms. This opens for students to participate in innovative projects with IBM and their customers.
- Cooperating with local newspapers on INJECT, a tool to help journalists become more creative and efficient in daily news reporting. Supported through Horizon2020.
- The News Angler-project uses information and communication technologies to exploit big data and social media. Supported by The Research Council of Norway (IKTPLUSS).
- Agreement between UiB and TV2 of using new studio facilities. This deal secures students access to top of the state facilities for TV-production.
- UiB-students gets work experience from many companies in the cluster.

The DigUiB Learning and Communication Lab is developing new technology in education and outreach from MCB. There is also excitement linked to the establishment of the UiB Centre for Investigative Journalism.

Establishing knowledge clusters is one of several working methods by which UiB will reach its goal to develop outstanding research and education environments of excellence.

“The development in Media City Bergen is very exciting. The cluster idea is to gather public, private and academic participants under the same roof. The MCB-success shows that this idea works”, says UiB Rector Dag Rune Olsen.



Ellen Eriksen is studying the first year of the bachelor programme in journalism at UiB. PHOTO: EVIND SENNESET

Synsmaskinen: How art responds to political crisis

"As artists, we try to find different ways of talking about the problems of a scientist", says Professor Frans Jacobi. Leading the artistic project *Synsmaskinen*, at the Faculty of Fine Art, Music and Design, he has investigated the multiple crises facing the world today.

It may sound paradoxical, but *Synsmaskinen* has made me more hopeful that the world can overcome the multiple crises we are in", says Frans Jacobi.

Synsmaskinen meaning *vision* and *machine*, has been a very complex project, with seven parts. Each of these has reached out into the world and involved many artists. The point of departure was to investigate different crises the world is in the midst of; From the climate crisis to the financial crisis, to social crises and democratic crises. Nonetheless it is capitalism's grip on the globe and

human beings that has been the key subject. But the most urgent crisis is a hidden one.

"In fact, *Synsmaskinen* has primarily addressed the major underlying crisis that is invisible. Namely, a crisis in how we see the world. We think the perception is a crisis in itself", says Jacobi.

He states that the artists' own journey is the starting point in *Synsmaskinen*, and the artists have used themselves very directly.

Scripted manuscripts

Many different art forms have been

involved in *Synsmaskinen*: Film, Performance, Text, Printmaking, Textile, Photography, Drawing, Text, Performance and Film to name some. According to Jacobi a common feature is that almost all projects explore the relationship between the different meanings of scripts. In English a script can both mean manuscript or script for a computer program.

"In the performance *Lidos 61*, about hidden stock exchange, Dark Pools, that *Synsmaskinen* did during the Venice Biennial in 2017, for example script was both a manuscript and computer script," Jacobi explains.

FACTS

A new faculty at UiB

- On 1 January 2017, the Bergen Academy of Art and Design became part of the University of Bergen and, together with The Grieg Academy, established the Faculty of Fine Art, Music and Design.
- The new faculty offers BA, MA and PhD programmes based on an internationally recognised level of artistic research.
- Around 600 students and 130 staff members.



PHOTO: HETTON-KROEN



"Another World is Necessary." From *Synsmaskinen*'s performances in Porto Alegre, Brazil. PHOTO: SYNSMASKINEN

He is Danish, and is applying for his second term as a professor of time-based media at the Department of Fine Art at UiB.

Another World is Necessary

Synsmaskinen has attempted to create art that shows the complexity of the problems the world faces.

"Political art in my opinion tends to be too simple. I think *Synsmaskinen* has succeeded in reaching out and finding issues that have ramifications in vast parts of the world", says Jacobi.

As examples of individual projects that have made an impact, Jacobi mentions the film *Dignity* directed by Michelle Teran, a former doctoral fellow at Department of Fine Art. *Dignity* is about the occupation of empty buildings in Madrid and looks at the forces of crisis activism. In another part of *Synsmaskinen*, the *Utopia Machine*, Professor at the Department of Fine Art, Thomas Kilpper, went to Porto Alegre in Brazil and created the work *Another World is Necessary*.

Utopian visions

"Utopia Machine used the unstable and corrupt political situation in

Brazil as a starting point for artistic intervention. The World Social Forum was founded in Porto Alegre in 2001 and held its first global summits here under the slogan "Another World is Possible!". In *Synsmaskinen* this has become "Another World is Necessary." There were also large scale performances in Porto Alegre, where Jacobi played a central role.

Brandon LaBelle, also a professor at the Department of Fine Art, has been responsible for another part of *Synsmaskinen*, entitled *Dreams of a Sovereign Citizen*. This part is about utopian visions, dreams of solidarity and ways in which individuals can win back their freedom.

A subjective language

But what exactly separates the work of *Synsmaskinen* from, for example documentary filmmaking?

"To name one example we made as part of *Synsmaskinen*, a movie called *Burst*. It deals with vast holes in the ground in Siberia that has been created by exploding metan gas. We have taken the symbolic language of the nomads in the area and tried to translate it into a unique film language. An anthropologist would describe the language. In my view, in

scientific methods there is a form of distance to the content. As artists we strive for a subjective, metaphorical and symbolic language. *Synsmaskinen* has been a very good and efficient platform for collaborating with other artists I find interesting. My artistic work has developed through the project. It may sound paradoxical when I say I have become more positive, but crises are also transformation, a necessary transition to something new", Jacobi states. ◦



Synsmaskinen is a multidisciplinary project which ran between 2014–2018. Together with the Bergen based artists Åse Lovgren and Benedicte Clemetsen, **Frans Jacobi** has managed *Synsmaskinen* since 2014.

www.synsmaskinen.net



Bringing actionable knowledge to the UN

How can research and higher education help accelerate the transformation to sustainable and just societies?

When the interdisciplinary Centre for Climate and Energy Transformation (CET) opened at the University of Bergen (UiB) in October 2017, it included a long-standing engagement with the Sustainable Development Goals (SDGs).

“We are engaged in societal cross-roads, trying to better understand

how to meet the ambitious goals we as a society have set for ourselves in terms of sustainable transformation,” says Professor and CET’s Director Håvard Haarstad.

From the hyperlocal to the global
Working with politicians, public officials, industry and civil society at all levels from the hyperlocal to the

United Nations (UN) underlines CET’s broad and ambitious scope.

“The need for more research to find solutions and how society handles climate-related problems is at the core of CET. Being in dialogue with societal actors improves the research we do and makes our work more relevant to decision-makers,” Haarstad observes.

◀ ENERGY DIPLOMACY: The CET research team – here represented by its Academic Director Håvard Haarstad, Siddharth Sareen and Jakob Grandin – communicates its research in channels directly connected to political decision-making. PHOTO: EIVIND SENNESET

In spring 2018 the centre contributed to two policy briefs towards the science base for SDG7: Affordable and Clean Energy.

“What roles can social scientists play in accelerating sustainable energy transformations? This is a question we discuss a great deal at CET. It ties in with our key objective of *actionable knowledge* and providing scientific advice to decision-makers,” says Postdoctoral Fellow Siddharth Sareen, who was CET’s main contributor to the policy briefs.

Accelerating action on SDGs

Via the SDG Bergen initiative, UiB was invited by Norway’s Permanent Mission to the United Nations to submit a proposal, together with the Ministry of Foreign Affairs, for Norway’s official, high-profile side event at the high-level political forum (HLPF) in July 2018. In consultation with the Ministry, SDG Bergen framed the university’s specific contribution in terms of CET’s involvement in the SDG 7 Policy Briefs.

“SDG7 aims to ensure access to affordable, reliable, sustainable and modern energy for all by 2030. At CET we work closely on energy governance, and look forward to contributing in ways that can have a constructive impact on future decision-making,” says Sareen.

CET contributed actively to the inaugural SDG Bergen Conference in February 2018 and arranged the first annual Bergen International Students Conference in April. CET

will co-organise a training workshop on innovative research and education at the HLPF.

“Academia needs to step up its efforts to design education around sustainability issues. The SDGs are a great way to mobilise interdisciplinary collaboration because they concern everyone,” says PhD candidate Jakob Grandin, who is in charge of CET’s contribution to the workshop. ◦

FACTS

CET, UiB and the SDGs

- Centre for Climate and Energy Transformation (CET) at University of Bergen (UiB) was launched in October 2017.
- CET researchers co-authored two policy briefs in support of the SDG7 (Affordable and Clean Energy) review at the UN high-level political forum 2018 (HLPF).
- The official Norwegian side event at the HLPF, co-organised by Norway’s Ministry of Foreign Affairs and the SDG Bergen initiative at UiB, will feature CET’s presentation of the research behind the policy briefs.
- CET will co-organise an HLPF training workshop on how university partnerships can accelerate SDG action with other leading SDG-oriented universities.
- CET has established the UiB Collaboratory to bring together students and researchers to work on sustainability issues.
- See uib.no/en/cet for more.



What is SDG Bergen?

SDG Bergen is a strategic initiative by the University of Bergen to engage with the Sustainable Development Goals.

The University of Bergen (UiB) is one of Norway’s leading comprehensive research universities, with long-standing global research partnerships. In 2017 UiB launched a university-wide strategic initiative to engage with the Sustainable Development Goals (SDGs), spearheaded by the university’s participation in the UN Ocean Conference. As the first Norwegian university to institutionalise the 2030 Agenda, UiB organised the inaugural, high-level SDG Bergen Conference in February 2018, on behalf of the university sector in Norway and in cooperation with Norway’s Ministry of Foreign Affairs and Ministry of Education and Research.

The 2018 SDG Bergen Conference was the first of its kind worldwide, and brought together more than 300 researchers, educators, politicians, government and UN officials, NGOs, and industry representatives to discuss how universities can contribute at the science-policy interface required for the goals of the 2030 Agenda. The conference laid the foundation to create innovative channels for science diplomacy. The SDG Bergen Conference is an annual event.

UiB has created the SDG Bergen Task Force to address and develop the science-policy interface. SDG Bergen was initiated by the UiB Rector and his team and reports directly to the leadership. Building on the position as Norway’s premier SDG-oriented university, UiB has established leadership through a national committee for the 2030 Agenda.

Contact

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“ I think that equality is an idealistic concept that is an impossibility. |

Exploring the true nature of inequality

The UiB Magazine interview: Bruce Kapferer

*With the pioneering **Egalitarianism** project, Professor Bruce Kapferer wanted to challenge conventions in anthropology and to redefine how inequality is viewed.*

When Professor Bruce Kapferer was employed by the Department of Social Anthropology at the University of Bergen (UiB) he brought with him the experience of field work in several continents and research that included hierarchical orders and inequality; and dynamics of political, economic and socio-cultural transformation in small and large scale social systems.

Inequality is the issue

The question of inequality within societies and the nature of egalitarian processes overcoming them was at the heart of his concerns when he

was awarded an Advanced Grant from the European Research Council (ERC). Fittingly the project, which kicked off in June 2014 and concludes in June 2019, is called *Egalitarianism: Forms, Processes, Comparisons*.

The UiB Magazine met him in his Bayswater, London flat for a conversation on the pioneering research defining the project.

“The whole project is much more than being an exercise in the study of inequality. I think that equality is an idealistic concept that is an impossibility. The research – comparative in scope and on a global scale – addresses the socio-historical and cultural dynamics of socio-

political formation and the hierarchy at root,” says Bruce Kapferer about the origins and current developments of the project.

“The stress is on egalitarianising forces that overcome or upset the hierarchies of social order and value that are inevitable in human existence.”

The power of anthropology

When the project kicked off, Kapferer called it “guerrilla anthropology” and said that “the changing landscape of inequality and protest demand a new form of radical anthropology”. He believes this is so now more than ever.



MAVERICK SPIRIT: Professor of anthropology and holder of an Advanced Grant from the European Research Council, Bruce Kapferer, in Sydney in April 2018 on his way to do field work in the Australian north.

PHOTO: ANDY LEWIS

"To me, in a sense, guerrilla anthropology is anthropology. Anthropology stands outside all the other disciplines. To put it rather crudely, most of the disciplines practised at universities have been born in the Nineteenth century and in the history of nationalism, which began the modern state," says the veteran anthropologist.

“ Anthropology is a guerrilla discipline in the sense that it challenges ruling assumptions. |

According to Kapferer, all those disciplines come out of a particular kind of cultural and political context of Western Europe or North America.

"Many unexamined assumptions regarding the nature and possibility of human beings were present that required challenge. Western philosophy offered radical critique but it, nonetheless, could not escape the limitation of many assumptions that were culturally and historically embedded in it," he says.

"But anthropology also took seriously other systems. These other systems were not necessarily bound by the same principles or frameworks of understanding that our own worlds were. Anthropology is a guerrilla discipline in the sense that it comes from outside a largely Western comprehension of things and challenges ruling assumptions."

Digitalisation, emancipation and human rights

One of the things the anthropologist has been looking at is how the nature of work has changed due to digitalisation.

"Digitalisation has transformed the nature of the political economies we live in. Everyone thinks technology is going to solve all the problems that we might have and enable certain forms of emancipation. A virtually millenarian religious value is being attached to technology. Anthropologists might see the current belief in the benefits of technology as having a kind of cargo cult impetus," says Kapferer, warming to this theme:

"Technology is the solution to all human ills. A couple of the project's researchers are examining this dimension and uncovering the technologically released forces that may be leading to new social injustices and inegalitarian effects."

Kapferer's challenge of a Western-centric view of poverty and inequality, includes Western notions of human rights. He claims that a universalisation of human rights creates new inequalities.

"Let me first say that I'm very much in favour of human rights. However, some human rights discourse runs the risk of a return of the imperialising and inegalitarian effects that accompanied the so-called rise of the West and the establishment of its global power or hegemony. Western virtues that are very much in the open in much public comment, demand the kind of critical examination that the overarching anthropological orientation of the project enables," says the anthropologist.

Inequality more than economics

Inequality is too frequently presented as a matter of economics. The *Egalitarianism* project takes the economy and financial issues as not necessarily things of primary concern. They are embedded often in other processes that are productive of what appear to be the determining effect of the economic or the financial.

"One of the big things I'm interested in is to look at egalitarianism in a way that's not just about equality. I want to shift things a little away from inequality, and the economic arguments that dominate, to perhaps the more encompassing concern of emancipation. Here the turn is to the hierarchical and oppressive structures of most known socio-cultural orders, the historical processes that were and are relevant, and how the resulting personal and social effects, their constraints may be loosened or broken," says Kapferer.

A global crisis

He believes the world is looking at a global egalitarian crisis. If there has been much progress there is much that is indicating gathering poverty, social dislocation, expanding warfare and their attending inequities.

“ A virtually millenarian religious value is being attached to technology. |

"We're now in a post-industrial era, in which there are new forms of oppression emerging as a function of socio-political changes associated with the transition from the nation-state into what could be called the corporate state," says the anthropologist.

He points to radical changes in the nature of class inequalities.

"In Britain the lines of class and social exclusion are being redrawn. A social depression is setting in – a dimension of the impetus to Brexit and a revitalised nationalism – if you went from here to the north of England, you'd see massively depressed populations," says Kapferer pointing



GLOBAL VISIONARY: Anthropology Professor Bruce Kapferer has built partnerships with major universities in the US, Europe, Australia, Africa, India and the Middle East as part of the EU-supported *Egalitarianism* project. PHOTO: ANDY LEWIS

northwards from the kitchen of his flat in central London.

Conclusions and new ideas

At the core of the field work of the project has been researchers being embedded with various movements of resistance, including observing shifts in the landscape of work and employment.

"The project has grown considerably since its start in 2014. It has built up numerous research links across the world into major universities in the US, Europe, Australia, Africa, India and the Middle East. Those participating actively in research coordinated by the project have mounted to over 20, far more than were initially envisaged," says the anthropologist.

He hopes that anthropology's clas-

sic field work will endure in the future.

"We need more guerrilla anthropology. We need more anthropologists. We need much more of a critical look at things."

As *Egalitarianism* enters its final year, Kapferer muses on the project's legacy, not the least internationally.

"The critical guerrilla anthropology perspective will lead to important reassessments of conceptual and theoretical perspectives that are still dominating discussions on problems associated with inequality. New directions to enduring issues of egalitarian significance are being suggested. With major practical effect. It's already influencing a lot of people outside the University of Bergen," says Bruce Kapferer, before adding: "Yeah, I think it should have a big impact." ◦

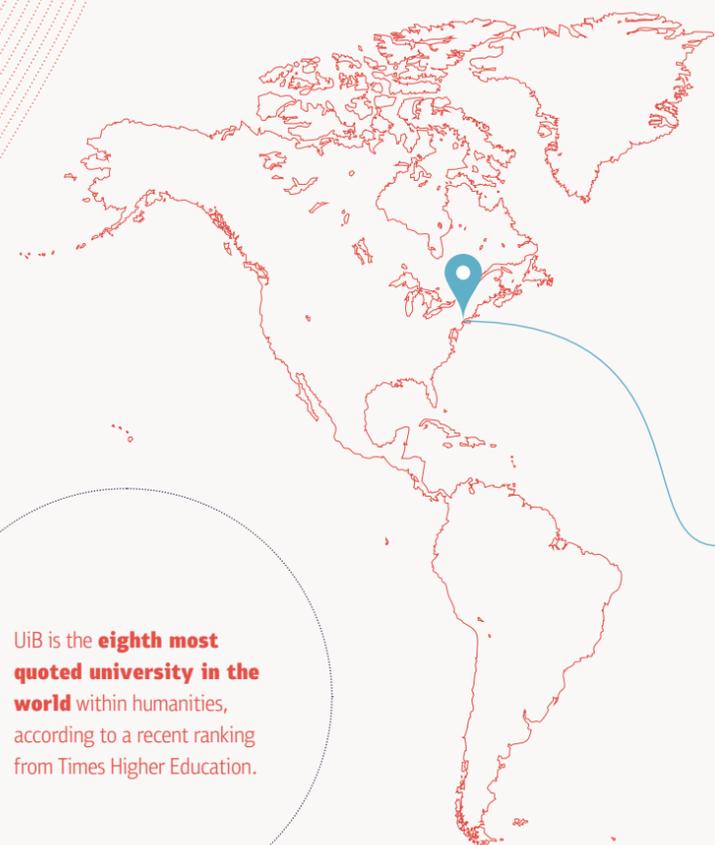
FACTS

Bruce Kapferer

- Australian-born anthropologist.
- Employed at the University of Bergen (UiB) since 1999.
- Was awarded an European Research Council (ERC) Advanced Grant in 2013 for the project *Egalitarianism: Forms, Processes, Comparisons*.
- In June 2014 the *Egalitarianism* project was officially launched at an event in Bergen.
- The project concludes in June 2019.
- See the *Egalitarianism* website for more: uib.no/en/egalitarianism

World Wide UiB

Some highlights from the international efforts at the University of Bergen (UiB) the last year.



UiB is the **eighth most quoted university in the world** within humanities, according to a recent ranking from Times Higher Education.

In August 2017 **International Centre UiB** opened. The competence centre for staff and students will be a driving force and facilitator for international cooperation and mobility at the University of Bergen.

In June, UiB participated at the United Nations Ocean Conference in **New York**. Among the university's activities were the presentation of voluntary commitments with partner institutions in South Africa and the Pacific. In December, UiB's new Vice-Rector for Global Relations, Annelin Eriksen met with diplomats and United Nations officials to follow up on initiatives on the Sustainable Development Goals.

Researchers from eight governmental Norwegian institutions, including the University of Bergen, and two private research institutes, have joined forces to document, understand and forecast the changes in the Norwegian part of the **Arctic Ocean**. The Nansen Legacy-project (Arven etter Nansen) has a budget of close to 800 MNOK.

Researchers at the Faculty of Medicine and Faculty of Psychology went to **Japan** in early 2018 to expand and strengthen UiB's commitment to cooperative research efforts.

The University of Bergen has entered into an expansive collaboration in marine research with the Ocean University of **China** in Qingdao. Qingdao has the position as China's leading ocean and marine city, just like Bergen is leading the way in Norway.

Groundbreaking research puts human evolution in a new perspective as significant archaeological findings reveals sign of modern human behavior 300,000 years ago. Professor Francesco d'Errico is part of the international team behind the remarkable findings in **Kenya**. D'Errico is also one of the most cited researchers in the world according to a ranking published by Clarivate Analytics, and Principal Investigator at UiB's new Centre of Excellence, Centre for Early Sapiens Behavior (SapienCE).

Malaria is one of the main causes for hospitalization among children in **Malawi**. As many die in hospital, many also die at home, several months after hospitalization. Professor Bjørn Robberstad at Centre for International Health at UiB is leading a project in Malawi, trying to find out if preventive malaria treatment after hospitalization can save lives.

JOIN UiB ALUMNI! Are you a former student from the University of Bergen? If so, you are one of our alumni and part of the UiB community.

If you become a member of UiB Alumni, you can stay in touch with your alma mater and join in discussions with other members of our alumni community. As we build our global alumni network there may be an alumni meeting where you live.

Interested in joining? Register at uib.no/alumni!





For bioCEED, practical training is crucial to effective biology education. PHOTO: EIVIND SENNESET

Excellent educators

“bioCEED have created an exceptionally strong community of practice in the area of biology teaching”, an international expert committee concludes.

“Everyone at bioCEED is thrilled about this result, and look forward to the second phase”, says centre director at bioCEED, Vigdis Vandvik, after passing the interim evaluation. PHOTO: KIM E. ANDREASSEN



In 2010, the Norwegian Ministry of Education and Research took the initiative to establish “Centres for Excellence in Education (SFU)” aiming to stimulate teaching excellence and educational innovation in higher education. Four years later, the status was awarded to bioCEED - Centre of Excellence in Biology Education.

The SFU-status is initially for five years, with the possibility of an extension for another five years, subject to an interim evaluation after three to four years. In December 2017, bioCEED, along with the SFU-centres CEMPE and MatRIC were given “the green light” to proceed to the next phase, after an extensive interim evaluation.

“It is a privilege to be able to continue working with our great colleagues – and the dedicated and ambitious teachers, students, staff, leadership and external partners, that develop and challenges our biology education”, says centre director Vigdis Vandvik.

Original thinking

bioCEED was evaluated by an international expert committee, led by Professor Paul Ashwin from Lancaster University. In the evaluation, he states:

“In short, they have created an exceptionally strong community of practice in the area of biology teaching. This community brings together educators, innovators and communicators to not only pass on best practice, but to stimulate original thinking in the area of biology teaching. In addition, they have promoted and overseen a large number of successful and innovative projects that focus on improving the student experience and aspects of the biology curriculum. (...) Taken together, the work completed during the first phase provides a firm founda-

tion on which to build the next stage of development.”

The review further concludes bioCEED made excellent progress on its four main areas of focus in the first phase: Teacher culture, Innovative teaching, Practical training and Outreach. In the report, the committee also gave valuable feedback and suggestions for the future work at the centre.

Cooperation

“In the first phase, bioCEED had focus on developing good ideas, and to test them in the biology educations and Norwegian higher education. We will continue to do so. But in the second phase, we will also focus on “landing” these ideas in our institutions and programmes. That requires close cooperation on all levels”, says bioCEED-director Vandvik, also congratulating the other centres with their successful interim evaluations:

“We are glad CEMPE and MatRIC passed their evaluations as well. We appreciate the national SFU-fellowship, and have been cooperating closely, and learned a lot, from the other centres”.

FACTS

bioCEED

- bioCEED is a consortium between the Department of Biological Sciences at UiB (BIO), Department of Arctic Biology at UNIS (AB), Department of Education at UiB (IPED), and the Institute of Marine Research (IMR) which has been awarded status as a Centre of Excellence in Biology Education.
- The SFU-initiative, which is a parallel initiative to the Norwegian Centres for Excellence in Research, is managed by NOKUT (the Norwegian Agency for Quality Assurance in Education); an independent expert body under the Ministry of Education and Research.
- There are currently eight Centres for Excellence in Education: bioCEED – Centre of Excellence in Biology Education, CCSE – Centre for Computing in Science Education, CEFIMA – Centre of Excellence in Film and Interactive Media Arts, CEMPE – Centre of Excellence in Music Performance Education, ENgage – Centre for Engaged Education through Entrepreneurship, ExclTED – Centre for Excellent IT Education, MatRIC – Centre for Research, Innovation and Coordination of Mathematics Teaching, ProTed – Centre for Professional Learning in Teacher Education.



bioCEED-students on fieldwork at Lygra, close to Bergen. PHOTO: EIVIND SENNESET



PHOTO: ISTOCKPHOTO

Trans-Arctic shipping and the tragedy of the polar ice cap

The Arctic sea ice is melting. Areas that previously have been covered with ice are opening up, facilitating increased access for ship traffic in the Arctic Ocean. How can the need for preservation of the vulnerable Arctic environment meet the world's need for trade and transport?

The continuing decrease of Arctic sea ice is gradually creating new trans-Arctic shipping routes, linking the Atlantic and Pa-

cific Oceans. It may even be possible to cross the North Pole on voyages between the west and the east within 2030.

Maritime traffic and the ecosystem
"Our knowledge of how the Arctic marine ecosystems will respond to influence caused by increased human

activity and maritime traffic is limited", Yngvil Marie Erichsen says.

She is a PhD student at the Faculty of Law, University of Bergen.

Erichsen is currently working on a project named "Arctic Shipping: Climate Change and Legal Challenges." The aim of the project is to explore the legal challenges related to increased commercial traffic in the Arctic Ocean, with special focus on environmental concerns.

Through Norwegian waters

A large part of Arctic ship traffic passes through waters that are subject to Norwegian jurisdiction. In the capacity of being both an Arctic flag state and an Arctic coastal state, Norway has a unique position in relation to Arctic shipping. Erichsen

will therefore focus particularly on the Norwegian legislation.

Through her doctoral thesis, Erichsen will examine the extent to which coastal and flag states have a right and an obligation to regulate Arctic shipping in order to protect the environment.

Savings at a cost

"The Northern Sea Route along Russia's northern coast is currently the most accessible Arctic seaway. Using the Northern Sea Route on seaborne trade between Atlantic and Pacific ports may cut the distance with as much as 50% compared to the southern routes via the Suez or Panama Canals. Time saving and reduced fuel consumption may give substantial cost saving", Erichsen explains.

The potential savings do however come at a cost: Arctic shipping poses great threats to the highly sensitive ecosystems of the region.

"An oil spill incident, for instance, would potentially be catastrophic for the environment, with long lasting and widespread damage. Navigation in the Arctic is extremely challenging with hazards such as ice, fog, strong winds and very low temperatures. The risk of an incident leading to accidental spill of fuel or cargo is therefore relatively high. In the event of an oil spill, the remoteness and hostile environment of the region make both response and clean-up operations extremely difficult, if at all possible", Erichsen says.

Other potential environmental threats include operational discharges and emissions, leakage of dangerous cargoes and introduction of alien species. Noise caused by regular passage may also disrupt the migration patterns of marine mammals.

A new Arctic situation

The United Nations Convention on the Law of the Sea of 1982 is the international legal framework for regulation of activity in the world's oceans, including Arctic shipping. However, the Convention was nego-

tiated before climate change and melting Arctic sea ice was an issue on the international agenda. The only provision dealing with Arctic navigation is a narrow and vaguely worded exception.

The Polar Code that entered into force 1 January 2017 does to some extent take account of the new Arctic situation.

Complex questions

Does the current international legal framework adequately protect the environment? How to regulate a vast area that is rapidly changing? How can the need for preservation of the Arctic environment meet the world's seemingly insatiable need for trade and transport? These questions are at the core of Erichsen's research.

"These are complex questions with global implications. I consider working with these issues a great privilege", Erichsen says. ◦



NORWEGIAN LEGISLATION IN THE ARCTIC:
In her PhD project, Erichsen can draw on her experience from the shipping industry. In addition, the research project matches her commitment to environmental protection. PHOTO: ANDRÉ KVALVÅGNES, DRAGEFJELLET LÆRINGS- OG FORMIDLINGSSENTER/UiB



PHOTO: DRAGFELLETT CENTRE OF LEARNING AND COMMUNICATION

A way out of "robot mode"

"By questioning our habitual thoughts and given truths, we can obtain insights which enable us to reflect on our lives in a different way," says Marianne Frøystad Walderhaug. During her dialogues with inmates, they try to discover how they can get out of "robot mode".

Walderhaug has been working as a prison philosopher for the last twelve years and she recently completed her doctorate with her thesis entitled *Philosophical Dialogues with Prison Inmates*. Her thesis is based on dialogues with prisoners in Bjørgvin Prison.

Connecting with the head

According to Walderhaug, the philosophical path is the actual objective of these dialogues. This involves allowing space for the expression of as many views and voices as possible, or as expressed in the words of a former inmate:

"I learned to reflect more on what others

say, not least because of my encounter with prison philosophy. After a while I learned to question my opinions about both issues and people" (*Syn og Segn 2007*).

According to several inmates there is something to be said for the philosophical way of thinking. It takes them out of "robot mode" and connects them with their heads and brains, thus enabling them to discover things for themselves.

"By the way we listen and ask questions, we are challenged to think for ourselves," says Walderhaug.

Removes the blinkers

According to Walderhaug, it is important

that anyone attending a philosophical dialogue should feel they are conversing with their partner on equal terms. Furthermore, the discussion topics are chosen by the inmates themselves.

"Philosophical dialogues are all about respecting each other's input, not necessarily by accepting the other person's opinions, but by allowing them to have opinions and to be able to think from their own perspective. The point is to wonder about what is being said, to be present in the dialogue and to be patient when it is difficult to put something into words."

During these dialogues Walderhaug has noticed that leading the life of a criminal

can cause criminals to become "blinkered". Blinkers prevent us from seeing issues and actions from different perspectives. In a way it can become easier to be criminal, with a slightly better conscience. On the other hand, philosophical dialogues allow us to open up in order to see things in different ways. This can be challenging because exposing oneself requires courage and willpower.

Insight and education

"Questions such as "who am I?" and "who do I want to be?" cause us to think about what we say and do, rather than aligning ourselves with habitual thoughts and given truths. By having to justify things in a new way, we are being made responsible for our own thoughts and actions. We appear to ourselves as we appear to others, or we see ourselves in the eyes of others, and in this way we can assess ourselves from an outside perspective," explains Walderhaug.

"Do you think that philosophical dialogues can help rehabilitation?"

"I think that it is wrong to talk about rehabilitation in this context. It would be better to talk about personal education and valuable insights which can provide us with expanded judgement. In other words:

"Given that philosophical thinking results in insights which helps criminals make choices that takes them away from a criminal lifestyle, we could say that it is not just beneficial for the criminals themselves, but also for the correctional services and society".

Confronting identity

Walderhaug says that she has obtained a greater understanding of and more respect for the dilemmas faced by many criminals if they choose to change themselves in order to live differently.

"It is challenging to make changes, and the importance of having the space to reflect on the concept of change and one's own change processes is something which has interested me in my capacity as a prison

philosopher. For many prisoners, change can involve anxiety and grief about what they are losing, and uncertainty about what they are heading towards or what they will become. Some prisoners experience that changing themselves involves going from "being someone" (ed: in the criminal world) to "becoming no-one" in ordinary society. It is all about questioning one's own identity and facing prejudice and stigmatisation about the life which one has been living."

Walderhaug goes on to explain that change also involve existential processes.

"Going behind the "mask" to see what makes a criminal choose whatever he or she does, can teach us more about the compromises they have to address and what their decisions mean. We need to take the time to dwell on how individuals experience being a person for better or worse."

By having to justify things in a new way, we are being made responsible for our own thoughts and actions. |

"One could also say that changing from a criminal lifestyle to a so-called "straight" existence involves reassessing one's values, something which in itself links change with philosophical issues. This approach to change makes philosophical dialogues relevant for both the inmates and those employees working in the correctional services", says Walderhaug.

Labelled as a criminal

In theory a prison sentence is an opportunity for prisoners to pay their debts to society. However, many inmates experience that they are met and treated as criminals, even when they have served their sentences. In a chronicle Walderhaug wrote for the newspaper *Bergens Tidende*, she says:

"People who have led a criminal life or committed serious offences cannot expect to start with a clean slate. Our choices result in consequences, and that also applies to crimes. On the other hand: can society expect criminals to become law-abiding citizens if we reject them, look down on them or doesn't trust them?" (*BT 14.02.2018*).

What do you hope to achieve by sharing your knowledge and experiences as a prison philosopher?"

"I would like to help create a more humane society where we see criminals as whole people, so that they can have a real chance of being included as members of society once they have paid their debts by serving a prison sentence".

FACTS



Marianne Frøystad Walderhaug

- Marianne Frøystad Walderhaug has been working as a philosopher at Bjørgvin Prison since 2006 and she recently defended her doctoral thesis entitled *Philosophical Dialogues with Prison Inmates*.
- Bjørgvin Prison is a low-security prison located in the municipality of Bergen.
- The doctoral thesis goes into depth in respect of philosophical practices and philosophical practice as a field of study.
- Walderhaug has developed three concepts: attentive equality, dialogical openness and polyphonic patience. These concepts express her thoughts about what philosophical dialogues are, based on her own experiences derived from dialogues with prison inmates.

“Things have never been what they used to be”

Past societal uproar on cultural expressions share many similarities with today's debate on video games, Associate Professor Rune Mentzoni at the Department of Psychosocial Science at UiB believes.

Today many, especially parents, watch with growing concern the younger generation's time-consuming activities related to video games. Mentzoni sees the debate in relation to similar discussions in the past.

Cultural changes

“It's true things are not what they used to be. But things have never been what they used to be. Different cultural expressions, like art, literature, theatre, music and movies, have sparked similar debates over the years. This will probably continue, as new technologies, like Virtual Reality (VR), advances in the coming years”, he says, adding:

“Cultural changes happens with every generation, and are typically followed by the older generations getting worried about the impact on the youth. Most of the time however,

I believe these changes are nothing to worry about”.

Studying loot boxes

Two of Mentzoni's main research interests are gaming and gambling. In his latest research project, he combines the two, investigating microtransactions in video games, or so-called loot boxes, which are items you can buy to gain progression or rewards in the gameplay. Often the player buys these packages unaware of its content, and many spend a lot of money to reach their goals.

When analyzing his findings, Mentzoni will look at a number of data, including the value gained from the purchases, and conclude whether or not loot boxes should be defined as a form of in-game gambling. The results will be presented to the Norwegian Gaming Authority.

Hooked or addicted?

Like other forms of addiction, gaming addiction can be a big problem in itself.

“Where does one draw the line between being hooked on a game, and being addicted?”

“An addiction often starts out as an activity that is seen as fulfilling, and adds a positive value to a person's life. However, this can change. For some, the activity becomes a negative interference in everyday life, causing a person to neglect responsibilities, obsess on the activity, isolate from the outside world and so on”, Mentzoni says adding:

“When addicted, a person will often realize he or she has a problem, without being able to quit the destructive behavior. This can lead to severe problems, even long after he or she is able to quit”, he says, pointing to the difficult financial situation that



PHOTO: EWING SENISET

can follow a gambling addiction as one of many examples.

Although Mentzoni underlines that playing video games, for most people, is a fun and harmless activity, he stresses that it is important to be aware of the danger signals, and seek help if necessary.

“There are national and local support groups for people suffering from most types of addictions. You can also discuss it with your doctor, who can refer you to a specialist if needed. If you worry you might be addicted, having friends and family to talk to can often be very helpful as well”, Mentzoni says.

Building momentum

Mentzoni is a partner in numerous networks and research groups that focus on gaming addiction and gambling. Amongst them is the new National Center for Gaming and

Gambling Research at the Faculty of Psychology, UiB, led by Professor Ståle Pallesen.

This winter, Mentzoni has been one of 16 participants chosen to partake in the new career development programme “Momentum” at the University of Bergen. Momentum is an interdisciplinary arena that aims to inspire to innovation and development for the best research talents at UiB. It is an important part of the commitment of the rectorate at UiB to prioritize young and talented researchers.

“The most useful thing for me in Momentum has been to network and share experiences with other researchers on similar levels in their careers. Even if we come from different faculties and departments, a common factor is that we are moving in similar directions as academics and researchers”, he says. ◦

FACTS

Rune Aune Mentzoni

- Born 1978 in Norway.
- Associate Professor at the Department of Psychosocial Science.
- Postdoctoral fellow at UiB 2013–2015.
- PhD from the Faculty of Psychology, University of Bergen, 2013.
- One of 16 talented young researchers chosen for the career development programme Momentum (2017–2018).
- Member of multiple research groups and networks on gaming and gambling addiction, including the new National Center for Gaming and Gambling Research at the Faculty of Psychology, UiB.

Filling the gaps of medieval knowledge

"The young researcher of the year" in humanities, Helen F. Leslie-Jacobsen, will in her newest project combine legal history and philology to fill gaps in our knowledge about medieval and Early Modern society.

The research project *"Transformations of Medieval Law"* will explore how medieval and Early Modern law books in Norway and Iceland reflect the legal and cultural contexts in which they were written and compiled, filling gaps in our existing knowledge.

Young researcher of the year

In November, Leslie-Jacobsen was awarded the prize "young researcher of the year" in humanities. A month later she was one of three researchers chosen for the Starting Grant from Bergen Research Foundation (BFS).

"This is like an early Christmas present", Leslie-Jacobsen said after being awarded the prestigious grant.

The next four years, as result of the funding, she will build and lead a research group for the project *"Transformations of Medieval Law: Innovation and Application in Early Modern Norwegian Law Books"*.

The project is developed based on the following research questions:

"How and to what extent do innovations in the structure, contents and use of law books of Early Modern Norway reflect changes to Norwegian society during the Reformation and Renaissance?"

"How did legal circles in Norway and Iceland order and apply their knowledge in medieval and Early Modern times?"

Documentation of transformation

Her project will in particular explore the later revisions of Magnus Lagabøtes *Landslov*, which was the first national law-code of Norway, in force for 400 years until it was superseded in 1687.

During that period, there were sweeping changes in religion, culture and language, all captured in and reflected by the law manuscripts of the period. However, little informa-

tion is available about the translation of the law from Old Norwegian to Danish in early modern Norway (16th and 17th centuries), later editions of the law and its revision to form the law-code *Jónsbók* in Iceland.

Leslie-Jacobsen's project seeks to fill these gaps, researching the later manuscripts of the *Landslov* in order to gain an insight into its development from the end of the Middle Ages onwards. The study will also show how and to what extent innovations and changes in the structure, contents and use of law books of Early Modern Norway reflect changes to Norwegian society.

Public outreach

Her new project will strengthen the research and teaching environment in medieval and Early Modern studies at UiB, as well as to provide multiple opportunities for public outreach as a part of the Medieval Cluster, that



PHOTO: NIKOLAJ ENDAAL

is under establishment. The project will result in new PhDs and postdoctoral fellows at the university.

The results from the project will be presented in journal articles, monographs, conference presentations, blogs and social media.

Medieval history

The project builds on what has been Leslie-Jacobsen's research interest for many years, at least since her studies of literature in Durham, which included both Old English and Norse languages.

From that moment, she was hooked on old texts, and chose to research Snorre Sturlason's *"Heimskringla"*, the best known of the Old Norse kings' sagas, for her master's dissertation. She took her second master's in Reykjavik, a fitting place for studying the heroes of the Icelandic sagas.

After coming to Norway to take a

PhD degree in 2009, she became part of the Centre for Medieval Studies at UiB, which was a Centre of Excellence (SFF) from 2003–2012. She stayed at the University of Bergen for her postdoc, with the "dragon-slayer" Sigurðr Fáfnisbani, the pre-eminent figure in the art and narrative of medieval Europe, as her main topic.

Leslie-Jacobsen has further analyzed this legend, placed it in a cultural context, and researched how the story developed over time. She explains that one of the primary interests in her studies was to see how Sigurd the Dragon-slayer was conceptualized and understood in medieval Norway.

"The new funding from Bergen Research Foundation means that I can take my career a step forward, build a research team, and contribute meaningfully to the University of Bergen", she says. ◦

FACTS

Helen F. Leslie-Jacobsen

- Born 1984 in England.
- Researcher in Old Norse Philology at the Department of Linguistic, Literary and Aesthetic Studies at the Faculty of humanities, UiB.
- Postdoctoral fellow at UiB 2013–2017.
- PhD from the Faculty of Humanities, University of Bergen, 2012.
- Awarded the prize "Young researcher of the year" in humanities at UiB, 2017.
- Awarded one out of three BFS Starting Grants in 2017, along with Konrad Tywoniuk/Faculty of Mathematics and Natural Sciences and Ari Stern/Faculty of Mathematics and Natural Sciences.

Aims to change climate research

Climate researcher Hans Christian Steen-Larsen has for many years explored some of the most extreme environments on Earth, in his search to improve our climate models. If he succeeds with his new ERC project, it will have great impact on today's climate research.

The SNOWISO-project comes with a "high risk/high gain"-status, meaning that ERC considers the hypothesis as a risk, but a risk worth taking, considering the solid background of the project leader and the potential gain if the hypothesis is verified. If the project succeeds, it will give new and exciting perspectives to the field of climate research.

A major question for the five-year run of the project, is if it is possible to analyze so-called isotopes from ice cores to create a better understanding of past climate variations and therefore better climate models.

SNOWISO

Isotopes are, simply put, atoms with a specific composition. The isotopic composition varies, for instance due to temperature, and in this way the isotopes contain an "image" of the climate at a given point in time.

The use of ice core records as

climate archives thus mainly relies on the assumption that the state of the climate determines the isotopic composition of precipitation, which is "stored" in ice, and can later be analyzed in ice cores. SNOWISO questions this view, with the hypothesis that the isotope record from an ice core is determined by a combination of the precipitation isotope signal and the atmospheric water vapor isotope signal above the snow surface.

With SNOWISO, Hans Christian Steen-Larsen will look at the processes in the hydrological cycle that influence the isotopic composition of the water, and establish how the water isotope signal is recorded in snow. This will give a more accurate analysis of data from ice cores. In the project, Steen-Larsen and his team will combine laboratory and field experiments with observations of snow and water vapor isotopes in Greenland and Antarctica. They will analyze ice cores from the past,

perhaps so far back as 1,5 million years if the new EU Horizon 2020 project Beyond EPICA - Oldest Ice is successful.

The larger picture

Steen-Larsen for a moment rests his eyes on the world map hanging on a wall of his office at the Geophysical Institute at the Faculty of Mathematics and Natural Sciences, University of Bergen.

"The map reminds me of how small we are as individuals. And how important it is to understand that we need to look further than our own backyard, to understand that our actions affects people and communities on a much larger scale", he says.

He feels climate researchers have a responsibility to enlighten the public and decision-makers about the consequences of climate change. That is why scientists need the best possible foundation for their research. In his quest to improve our



PHOTO: PRIVATE

climate models, Steen-Larsen has travelled to many of the most extreme environments on Earth, from Antarctica to Mount Everest. His research has also taken him to Bermuda, to study water vapor.

In Steen-Larsen's view, all this is closely linked together.

"I have a holistic approach, and aim to combine climate models with climate research on ice cores", he says, adding:

"When SNOWISO ends in five years, I hope to have built bridges between the analysis of isotopes in ice cores and climate modeling. To present new ways to understand climate, and climate dynamics".

Cooperation in Bergen

SNOWISO builds on many years of research, but the ERC project started in 2018. It will last for five years, and PhD positions will soon be in place at the university.

Steen-Larsen appreciates the

strong scientific community on climate research that already exists at the University of Bergen and the Bjerknes Centre.

"Climate research in Bergen is internationally recognized, and I look forward to cooperating with these groups. That is one of the main reasons why I moved SNOWISO to UiB", he says.

The climate researcher looks forward to the challenges that awaits the next five years.

"The most exciting thing with getting an ERC-grant, is the possibility to build a team and investigate these potentially ground breaking questions with them, he says, underlining the word "potentially".

"There is no guarantee that the hypothesis is correct, but if it is, I believe this will be the beginning of something really interesting", he says. ◦

FACTS

Hans Christian Steen-Larsen

- Born 1982 in Denmark.
- Researcher at Geophysical institute, and the Bjerknes Centre for Climate Research.
- Postdoctoral fellow at the Centre for Ice and Climate in Copenhagen, Laboratoire des Sciences du Climat et de l'Environnement in Paris, and University of Colorado in Boulder.
- PhD from University of Copenhagen, 2011.
- Awarded ERC Starting Grant for the project *Signals from the Surface Snow: Post-Depositional Processes Controlling Ice Core isotopic Fingerprint - SNOWISO*, focusing on enhancing our ability to interpret ice core climate records.



Plastic oceans

One out of four Norwegians have participated in cleaning the coastline for plastics, since the “plastic whale” made headlines around the world last year.

In January 2017, researchers from the University of Bergen opened the stomach of a whale found stranded on Sotra, west of Bergen. They pulled out 30 plastic bags, and multiple large and smaller pieces of plastic. The whale’s intestinal system contained no nutrition, the layer of fat was very thin and the weight was low for a whale of this size.

“It’s unbelievable how much plastic ends up in and by the ocean. What we see, sadly is just the tip of the iceberg”, says Christoph Noever, researcher at the Department of Biological Sciences at UiB.

He was the one opening the stomach of the Plastic Whale, and a year and a half later, Noever thinks it is important that we never forget the disturbing sight.

Eye-opener

The plastic whale made national and international headlines, and became an eye-opener of the severity of the plastic pollution-problem. The public responded, and in January 2018, a survey from “Medborger-panelet” showed that one out of four Nor-

wegians have been picking up plastic from the coastline for recycling within the last 12 months. According to the non-profit organization “Hold Norge rent” (Keep Norway clean), the number of organized events picking plastic from the coastline increased by 800 per cent in Hordaland county, where the Plastic Whale was found, pointing to the whale as a direct cause.

Heading for more plastic than fish

Globally, we produce around 320 million tons of plastic each year. According to a report from the World Economic Forum, every year at least eight million tons ends up in the oceans. That equals 15 tons of plastic pollution in the oceans every minute.

If we continue like today, by 2025 the ocean will contain one ton of plastic per three tons of fish. By 2050, there will be more plastic in the ocean, than fish.

The plastic will not disappear

“The consequences of seabirds, fish and other animals eating plastic, are well-documented. Animals who eat plastic can hurt

or clog the digestive tract, or get tangled up in plastic and become deformed or drown”, says Magnus Svendsen Nerheim, a UiB-graduated marine biologist who has researched plastic in the oceans.

Plastics is not going to disappear, but will be broken down to smaller pieces, eventually becoming microplastics, which are plastic pieces smaller than 5 millimeters in diameter.

“Even if these plastic pieces are small, they are not harmless”, ecotoxicologist Marte Haave at Uni Research warns.

“Microplastics can block the intestines and lower the reproductive capacity of smaller animals. There has also been found evidence that nanoplastics has entered the circulation of crabs and blue mussels”.

“We still do not know if it could hurt humans to eat blue mussels or crabs with microplastics in their tissue, or if the smallest pieces of plastic could enter fish tissue. There is need for more research in this area”, says Haave.

Molecular biologist Odd Andre Karlsen is head of a group of scientists at UiB, re-

searching environmental pollutants in the oceans, including environmental pollutants that exists on and in plastics.

“Environmental pollutants could disrupt the hormone system in animals and humans, and influence the ability to reproduce and evolve. They often end up in fat tissue, could pile up in organisms, and it can take a long time before organisms get rid of it. On the highest levels in the food chain, you find the highest levels of environmental pollutants. The animals on top tend to be food for humans. That is why we have dietary advices in Norway that says that we should not eat shellfish and fish from areas with high levels of pollution”, says Karlsen.

Dealing with the problem

Haave thinks it is crucial to act fast.

“The most important thing is to reduce emissions. We have to replace plastic with other materials where we can. Half of the plastic is used only once. It is meaningless to use everlasting materials for things we only use once”, she says.

Marine biologist Magnus Svendsen Nerheim agrees, calling for a debate on socioeconomic and legal perspectives.

“Our foolish use of plastic is creating a larger environmental problem. There are plenty of evidence supporting that we must think differently. We have to make sure that it does not end up in the environment. This means proper infrastructure for recycling, incentive schemes and/or recycling solutions that make it easy to choose solutions that are environmentally friendly, and a clear legal framework that holds manufacturers and consumers of plastic products accountable.”



“Picking up plastic from the coastline really helps. It means the flakes are not being turned into microplastic, and won’t damage life in and close to the ocean”, says Christoph Noever. PHOTO: SOLFRID LANGELAND



Toril Moi

Professor of Literature and Romance Studies at Duke University. Director of the Center for Philosophy, Arts, and Literature at Duke.



Toril Moi is a renowned professor, writer and columnist. Moi is also the UiB alumn (former student) of the month in June 2018.

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Bergen in the 1970s. It rained all the time. Students went to the film club to see obscure European movies, and drank a lot of beer. Hardly anyone had a phone. Mobile phones hadn’t been invented. And we were at once politically engaged, and innocent.

I was a feminist, some of my best friends were maoists, we demonstrated against Franco and in favor of abortion rights. But we weren’t rich. Norway had just begun to exploit its new oil resources. We didn’t talk about neoliberalism and globalism. We didn’t worry about careers, and whether we made a good impression, for we didn’t have to deal with Facebook and Instagram and all that. We actually had to go out on the town to meet others. Sitting alone at home meant simply that: sitting alone at home.

My best memories being a student at the University of Bergen is hanging out with friends, learning French, and Spanish and discussing ideas night and day. I wanted to learn French to be able to read books by Simone de Beauvoir in the original language. I really enjoyed all the feminist study groups and other groups I was in.

I also remember Sydneshaugen Skole. The reading rooms for humanities students. An old school where I worked all day. At some point in the early 1970s we had to turn up no later than 7:45 a.m. to wait for the doors to open at 8:00. Otherwise we might not get a seat. But I made friends in the hallways, went to lectures and enjoyed student life.

Three tips to students today: Be interested in everything, work hard and learn to express yourself precisely and sharp. Writing is thinking!

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THE LAST PICTURE | SLATE AT DIGITAL DAY

The digitalisation strategy at the University of Bergen supports and complements the university's strategy for 2016–2022 "Ocean, Life, Society". Digitalisation shapes the activities across the areas of education, research, communication, innovation and administration.

More than 1,000 UiB-employees visited the Digital Day in Grieghallen on October 4, to learn more about the ongoing and in-front digitalisation projects, tools and methods, and future digital solutions at the university.

Amongst many innovative presenters and stands, they met **Joakim Vindenes** at SLATE (see also page 20). He holds a Masters in New Media where he designed and developed a VR learning environment. Vindenes continues to work with learning environments in VR and extends the focus to explore how multimodal data gathered in these environments and analytics can be used to understanding learning processes. PHOTO: EIVIND SENNESET

