Centre for Advanced Study

Newsletter no. 1 • May 2000 • 8th year

Photo: Ellen Stokland

New CAS Board Chairman

Professor Aanund Hylland has been appointed to take over as Board Chairman at the CAS. He holds a University of Oslo chair in economics, but also has roots in mathematics and politics.
See more on the back page.

New Scientific Director

Professor of sociology Ole-Jørgen Skog has been appointed Scientific Director at the CAS, a post he will take up on 1 August.
See more on page 6

Centre for Advanced Study

The Centre for Advanced Study is an independent foundation with a board appointed by the Norwegian Academy of Science and Letters and the Universities Council. Prominent Norwegian and foreign scholars are invited for one-year stays to engage in research in the Centre's premises, in the basement and attic of the Academy's villa on Drammensveien.

Each year, activities are carried on in three research groups, with from six to eight members each. The work of each group is planned and organized around a common theme and headed by one or more prominent scholars. Groups are normally chosen within each of the following three areas:

- Humanities
- Natural sciences/medicine
- Social science/law

The CAS is exclusively a basic research institution, participants have no other obligation than their own research.

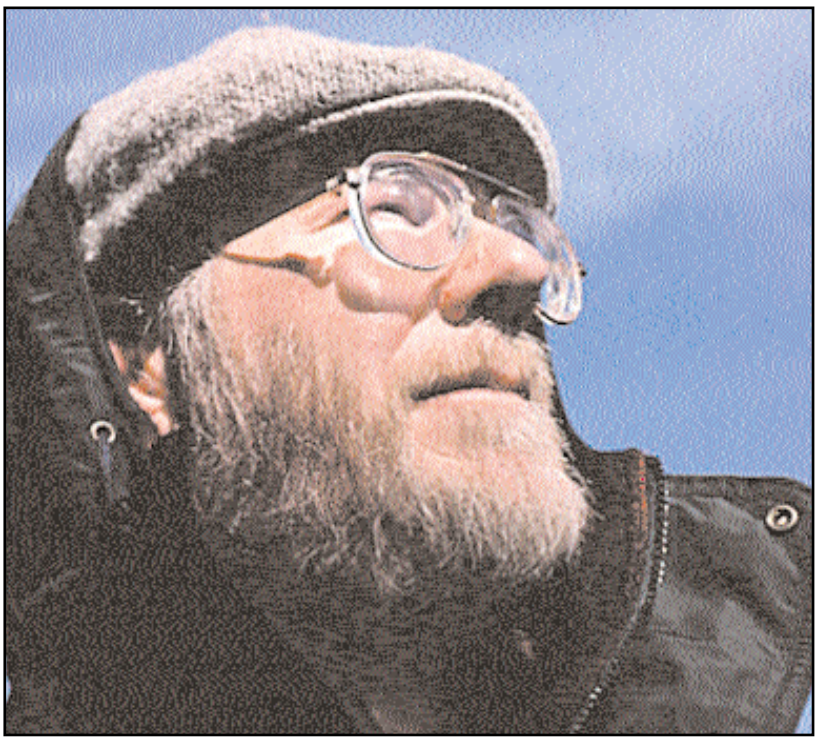


Photo: Joseph Mehling

Regime expert Oran Young fellow at CAS:

Sought-after adviser on global environmental policy

Political decision-makers all over the world listen when Professor Oran Young of Dartmouth College offers advice on international regulation to protect the environment. This year the prominent American scholar is allowing himself time for a research visit to Oslo.

Professor Oran Young (59) of Dartmouth College has always been interested in international politics and environmental issues. Protection of the Arctic, in particular, has been high on his research agenda. He was among the first to seek cooperation with the natural sciences on solutions to the world's environmental problems. Today he is known as a founder of research on international regimes, and political decision-makers all over the world listen to his advice.

Oran Young is spending the whole of the current year at the Centre for Advanced Study, and group leader Arild Underdal is very pleased.

"Young knows the field exceptionally well, and can build bridges between different approaches," Underdal says.

Continues on page 7

Research groups 1999/2000

Classical Chinese Philology
The group is headed by Professor Christoph Harbsmeier of the University of Oslo. Presented in the CAS Newsletter no. 2, 1999.

Explaining Regime Effectiveness
The group is headed by Professor Arild Underdal, the University of Oslo.
See pages 1-3 and 7.

Mesoscopic Physics
The group is headed by Professor Yuri Galperin, the University of Oslo.
See pages 4-6.

Regimes for a better world

How can the global community solve common problems? What decides whether international regimes succeed or fail? This year's social sciences group at the CAS is seeking the answers.

How do international regimes work and how can their effects be measured? Can the decline in SO2 emissions in Eastern Europe be attributed to international agreements, or is it due to economic stagnation?

It is just such questions this year's social sciences research group at the Centre for Advanced Study will be tackling, under the leadership of politics professor Arild Underdal and under the heading "Explaining Regime Effectiveness".

Professor Arild Underdal

Arild Underdal (53) has held a chair in political science at the University of Oslo since 1988, and is heading this year's CAS group in the social sciences. Underdal deserves much of the credit for linking the Norwegian political science community with active research into international co-operation on the environment. He has played a prominent part in several international research projects, and is currently chairing the scientific committee of a major international research program on human activity and global environmental change (IHDP).

Joining him in the CAS research group are:

- Senior lecturer Jennifer Bailey, NTNU, Trondheim
- Senior lecturer Gunnar Fermann, NTNU, Trondheim
- Professor Jon Hovi, University of Oslo
- Research Director Olav Schram Stokke, the Fridtjof Nansen Institute, Oslo
- Dr. Jonas Tallberg, University of Lund, Sweden
- Professor Oran R. Young, Dartmouth College, USA
- Professor Michael Zürn, University of Bremen, Tyskland
- Professor Christer Jönsson, University of Lund, Sweden
- Professor Edward Miles, University of Washington, USA

"There is already a good deal of information in this area," Underdal tells us, "but we need to develop models and methods for acquiring more accurate and firm knowledge, in order to make it possible to tailor-make regimes for specific purposes."

International regulation

International regimes are sets of rules which are supposed to govern activities in particular areas. They are the instruments adopted to solve problems which require joint solutions, across national boundaries.

"Just as when a doctor makes a diagnosis and prescribes treatment with particular medicines, international regimes are designed to 'cure illness'," Underdal explains.

"In the research group we shall be seeking advances in two main fields," he goes on. "We want to measure the effects of regimes, i.e. determine whether they work and what consequences they have. Did the 'patient' recover? At the same time we shall be trying to find out which are the deciding factors in the success of some regimes and the failure of others.

How can the effects be measured?

Measuring the effect of a regime is a complex business; methods have to be chosen according to the type of regime and the type of problem. One possibility is to compare the state of affairs under the regime with some business-as-usual scenario. Has the situation deteriorated, improved, or remained unchanged? What would have happened had there been no regime?

Underdal again refers to climate change agreements as an illustration.

"We often begin with conditions before the regime was introduced, and assume – with CO2 emissions, for instance –- that the current trend would have continued at the same rate if the regime had not been introduced," he explains. "But we don't know whether this is right. Besides, a whole lot of other factors can affect developments. Economic recession, higher energy prices, and the building of nuclear power stations also contribute to lower emissions."

Whereas in medical research laboratory experiments can be carried out to isolate the effect of one particular cause, such methods are not available to the social sciences. Nor can Underdal and the group rely much on statistical material, because a sufficient number of observations can rarely be made.

Developing good methods and models is a general problem known to all the scholars in the CAS group. Last autumn they accordingly devoted a good deal of time to group sessions, at which numerous ideas and new approaches were aired. The results will be presented in a book to be edited by Underdal in collaboration with Oran Young.

What is the ideal situation?

Another way of measuring a regime's effectiveness is to define the ideal situation and ask whether the regime helps to achieve it. What does it mean to be healthy? Did the medicine improve the patient's condition?

"Where environmental questions are concerned, we need to consult with the natural scientists," Underdal explains. "Take overfishing in the North Sea: marine biologists can tell us how large a fish stock ought to be to permit optimal long-term yields. That gives us a yardstick. But when we are dealing with pollution it is usually much harder to give a clear answer, for when can the North Sea itself actually be regarded as 'healthy'?"

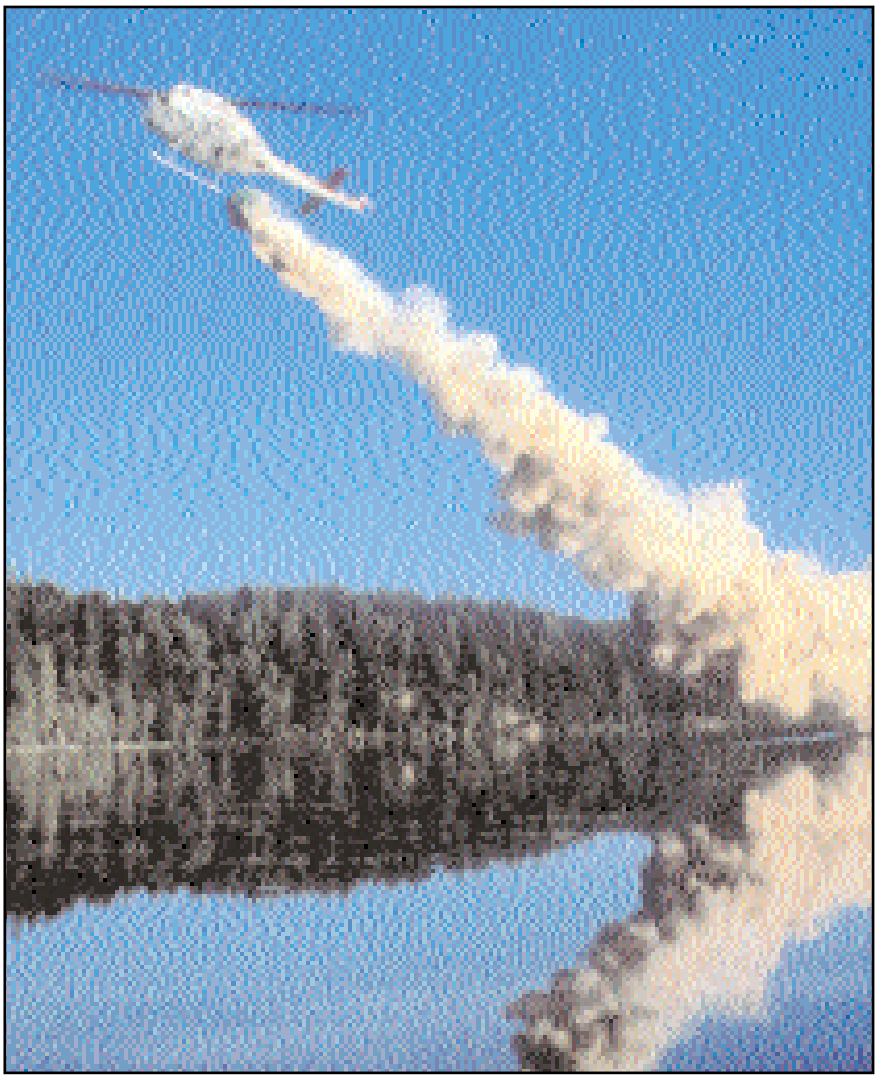
Matters become even more complicated when conflicting sets of values are involved. Nature has traditionally been viewed as a resource which man can exploit, but not destroy. Some hunting of whales is acceptable, provided the ability of the stock to reproduce itself is not diminished. But in recent years a rapidly growing eco-centred environmental movement has arisen which believes that all living beings have rights. They see the whale as a unique species of animal which man has no right to kill.

"That brings us up against two opposed sets of values, with completely different answers to what it means to be 'healthy'."

Mechanisms

One of the main challenges is that of identifying the critical factors determining a regime's success or failure. Underdal approaches the question from two angles.

"One approach is to see which mechanisms are capable of producing particular effects," he says. "A regime can affect a country's assessment of the kinds of activity that are profitable. Rewarding actors who follow up international agreements is one way of doing this. Sanctioning defection is another."



Which factors decide whether international environmental regimes succeed or not? Researchers at the CAS are exploring the question. (Photo: Mark Edwards/Still Pictures)

Through negotiations and joint studies, the actors learn more about the problem in question, so drawing up a regime can have the effect of a normative learning process. A country which has initially been sceptical to a regime may realise that it is "for its own good", and change its mind. West Germany was originally opposed to measures against acid precipitation, but changed its position when decision-makers and the public at large learned more about the damage caused.

Critical factors

The research group is also looking for critical factors, those which decide whether a regime works as intended. One key lies in the characteristics of the problem itself. Some problems are much more difficult to solve than others. The difficulties may be of a purely intellectual kind, or rooted in political problems and therefore "malignant". Where environmental questions are concerned, individual interests often differ from those of the community, and the parties are differently affected by proposed solutions. If on top of that there is considerable uncertainty about the very nature of the problem, that aggravates the situation still further. The parties go for the interpretations that suit them best.

Another decisive factor is the capacity of an institution to solve a problem. This entails not only acquiring insight into the problem area, but also being capable of making collective decisions. The bigger the majority required to amend existing rules, the harder it is to introduce new regulations. But insight and decision-making capabilities alone are not enough: quite often one also needs coercive power. Although votes count, resources – power – often matter most. The challenge is to find the best possible combinations of these and other components. And that is precisely where the CAS group's main challenge lies.

"We know a good deal about which factors are effective," says Underdal. "But we don't know exactly what 'doses' are needed to achieve the best result. Our challenge will therefore be to arrive at more precise explanations of the effects of regimes."

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2000-2001 new research

Editing Medieval Manuscripts

Professor Odd Einar Haugen of the University of Bergen will be heading next year's humanities research group at the Centre for Advanced Study. The group will be concentrating on Norse texts, and especially on Heimskringla, also with a view to extending the platform for new theory and methods.

Publishers of medieval texts have to mediate between often anonymous writers long since dead and present-day readers. This confronts them with a profound dilemma: how can they be faithful to the text while at the same time making it comprehensible and accessible to modern readers? Since this is well-nigh impossible, some choose to normalise the language so as to adapt the text to a broader market, while perhaps publishing a more faithful version as a supplement. Others adhere to the original wording down to the tiniest detail.

Over the past 500 years, editions of early texts have almost always been published as books. The advantages are of course that books can be carried everywhere and need no electricity or user training. But line-by-line texts also impose some limitations. New technologies permit medieval texts to be published electronically, with all the attendant advantages such as hypertext and search tools. Good indexes and references to other sources, electronic footnotes, and links to other documents or the Internet, digitalised images and scanning of original hand-written manuscripts are among the many opportunities offered by electronic texts which have not been available from printed books.

New information technology will be a main feature of the project.

Participants:

- Professor Odd Einar Haugen, University of Bergen (leader)
- Professor Jonna Louis-Jensen, University of Copenhagen
- Professor Hubert Seelow, University of Erlangen-Nürnberg
- Senior lecturer Kolbrún Haraldsdóttir, University of Erlangen-Nürnberg
- Dr. Karl Gunnar Johansson, University of Gothenburg
- Senior lecturer Jon Gunnar Jørgensen, University of Oslo
- Senior consultant Espen Ore, University of Bergen
- Research scholar Rune Kyrkjebø, University of Bergen

Mesoscopic physics:

Offers solutions for the data tec

Professor Yuri Galperin
Russian Yuri Galperin (56) has been professor of solid-state physics at the University of Oslo since 1993. He obtained his doctorate at the University of Leningrad (now St. Petersburg) in 1970, and has been a principal senior scientist of the Ioffe Institute in the same city since 1972. Galperin is regarded as a pioneer in the field of mesoscopic physics, and has been a visiting scholar at a large number of international research institutions. In 1990 and 1992 he was awarded the Ioffe Institute's research prize. Among the participants in the physics group are:

- Professor Boris L. Altshuler, University of Princeton, USA
- Professor Amnon Aharony, University of Tel Aviv, Israel
- Professor Carlo Beenakker, University of Leiden, the Netherlands
- Professor Ora Entin-Wohlman, University of Tel Aviv, Israel
- Professor Leonid Glazman, University of Minnesota, USA
- Professor Eivind Hiis Hauge, NTNU, Trondheim
- Professor Yoseph Imry, the Weizmann Institute, Israel
- Professor Mats Jonson, Chalmers University of Technology, Sweden
- Professor David Khmelnitskii, University of Cambridge, UK
- Professor Robert Shekhter, Chalmers University of Technology, Sweden
- Professor Boris Shklovskii, University of Minnesota, USA
- Professor Boris Z. Spivak, University of Washington, USA
- ProfessorVadim Gurevich, the Ioffe Institute, Russia
- Professor Veniamin Kozub, the Ioffe Institute, Russia
- Professor Vladimir Kravtsov, ICTP, Italy
- Professor Yehoshua Levinson, the Weizmann Institute, Israel

(Photo: Ellen Stokland)

Knowledge of mesoscopic physics will make it possible to increase computing power while shrinking computers, according to Professors Eivind Hiis Hauge, Veniamin Kozub, and Yuri Galperin..

When the first computers appeared in the 1950s, they were as big as houses; before long we shall be slipping our PCs into our inside pockets. By means of mesoscopic physics the computers of the future will concentrate ever-increasing capacity in tiny volumes, says this year's physics group at the CAS.

Computer technology has developed extremely rapidly in recent years, and the electronic aids in everyday use are growing ever smaller. Computer chips are already minute, and there will soon be active electronic components at the size of proteins. But when components become so tiny, problems arise: their inner mechanics and interaction with their surroundings change, and the components cease to work in the way conventional wisdom would suggest. It is these mechanisms this year's natural sciences research group at the CAS is seeking to learn more about.

The field of research is known as mesoscopic physics, and could perhaps be described as a cross between classical and quantum physics. Whereas classical physics deals with the standard "laws of nature" that operate at the macro level, quantum physics considers atoms, on a scale up to one thousand millionth of a metre – a nanometre. Mesoscopic physics allows itself a somewhat wider range, about one hundred nanometres, despite which the laws of quantum physics apply.

When the components in cards and transistors become extremely small, they cross a magic boundary in physics and begin behaving differently. So unless the technology adopts another set of rules, its systems break down, because the computer can no longer understand its own data.

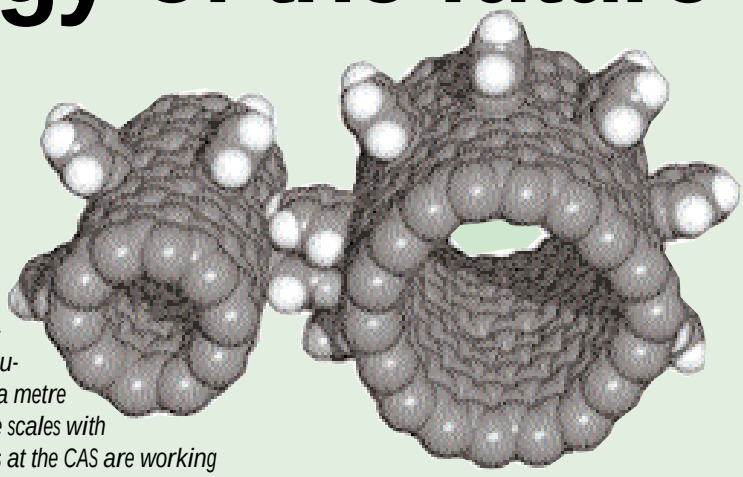
"A pin floats on the surface tension of water," Galperin explains. "But if you make a bigger model of the pin out of the same materials, it will sink to the bottom immediately. Size determines how the pin and its surroundings affect each other. A small model of a ship will not necessarily behave just like the full-size ship, and it is important for the shipbuilding industry to be aware of the difference and correct for it."

100,000 electrons make one bit

To produce one bit for a computer today takes about 100,000 electrons. They enable the computer to interpret the total system, distinguishing between 1 and 0 so that data can be read. Using present technology, the system is unable to understand data if there are fewer electrons or if they are packed more tightly.

"Imagine the Mona Lisa painted on a pinhead," Galperin says. "Without a microscope,

chnology of the future



Tiny scale
Tubes made of carbon atoms, two thousand millionths of a metre in size, showing the scales with which the physicists at the CAS are working

you can't see what the painting depicts, it's just a "mist". We have a corresponding problem when electronic components get extremely small. We lose control of them.

"But what we and the computer industry are looking for is an increase in performance per square millimetre, which means reducing the number of electrons needed to produce one bit. The system becomes quicker and can be packed more tightly, and computer chips can be made even smaller," Galperin continues. "The goal must be for a single electron to be enough to distinguish in practice between 1 and 0. We don't see that being achieved in the foreseeable future. One of our tasks is to find out where the limit to what is possible goes."

High technology

The international computer industry in particular has long since realised that it is dependent on an increased understanding of mesoscopic physics, and is investing heavily in this field of research, both setting up its own research centres and sponsoring projects at universities and colleges.

"The development of high technology and our research go hand in hand," Galperin argues, regretting that the Norwegian authorities have been less than generous with their grants, because the Norwegian research environments will soon be left behind unless they are given higher priority.

"The Swedes and Finns are leading the world with their mobile phones, thanks not least to mesoscopic technology. Sweden has for a long time been investing much more than Norway in research in this field. This country's economy has largely been based on natural resources, but that can't go on for ever."

Galperin believes it is high time for Norway to start looking for alternatives and investing in leading-edge high technology. "In this connection Norway is a kind of mini-Soviet," the Russian professor says, unexpectedly supporting the view recently expressed by a certain Swedish Minister. "The Soviet economy was also based on the sale of natural resources, which proved fatal when oil prices fell and the USA launched its Star Wars program. The Soviet economy collapsed, which in turn led to perestroika."

Large group of scientists

Galperin's group has attracted a large number of scientists at home and abroad, with a total of 32 physicists joining in the project in the course of the CAS year. Only a few will be working at the Centre for the whole academic year. Instead, there will be a large number of shorter visits. The fact that top people are notoriously busy makes it unrealistic to concentrate one-sidedly on long stays. Limited funding is another reason why scholars who are in great demand can not spend a whole school year in Norway.

"All the same, we have many outstanding scientists on our team," Galperin says, "because they think the project looks exciting. Besides, they are interested in Norway, which is both exotic and beautiful. In addition, the Centre offers an excellent and peaceful atmosphere for research."

The CAS has no laboratory, and Galperin's group is working exclusively at the theoretical level, though in close cooperation with experimentalists. In the autumn of 1999, the group held a research workshop which attracted specialists in experimental and theoretical physics to the Centre from all over the world.

"These leading researchers presented laboratory experiments, the results of which we then cooperated on analysing," Galperin tells us. "That led to the initiation of several new projects, in both experimental and theoretical physics."

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2000-2001 new research

Dynamics of Fluid Rock Systems

Professor Bjørn Jamtveit of the University of Oslo's Department of Geology will be heading next year's research group in the natural sciences. The theme will be dynamic processes in systems consisting of types of rock and fluids (liquids and gases). Pores and cracks in the earth's crust are always filled with fluids, except in immediate proximity to the surface. The interplay between the fluids and the surrounding rock has a considerable effect on the development of the earth's crust, making knowledge of such processes very important to society. In such disciplines as petroleum geology, ore geology, environmental geology and geotechnology, understanding of the transport and deformation processes in fluid-rock systems is fundamental.

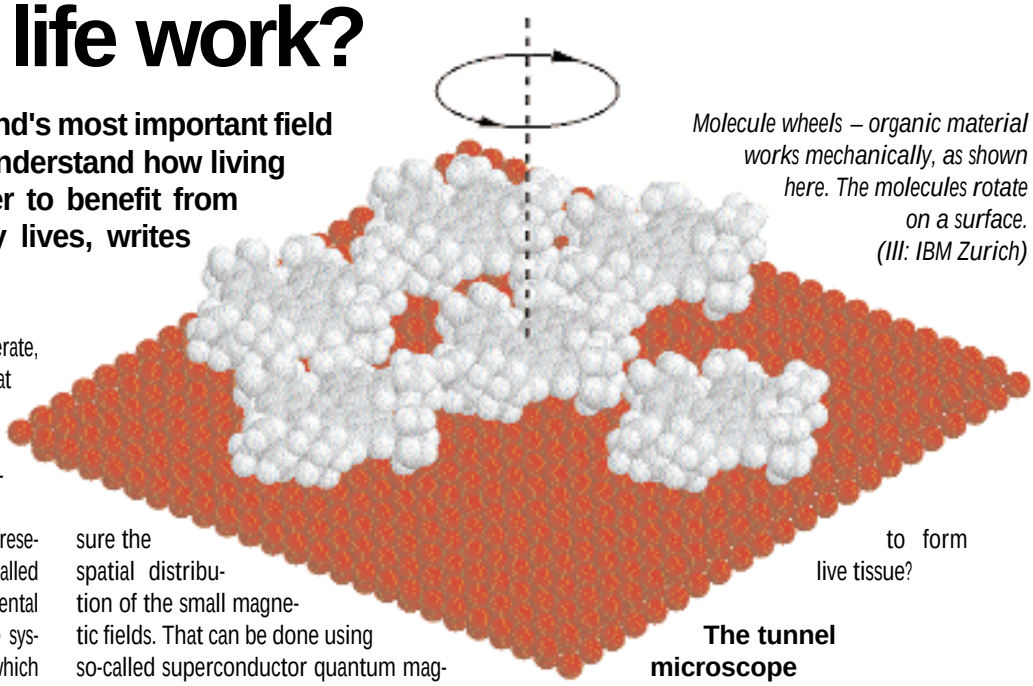
In the project, modern statistical physics will be combined with knowledge of natural geological systems in such a way as to make it possible to simulate and model the processes in question. One important problem area which will be studied concerns the links between fluid flow, deformation, and chemical reactions between fluids and types of rock. This will include studies of how liquids and gases move through and out of rock when porosity is reduced , and of how they sometimes penetrate types of rock with little or no porosity to start with. In Jamtveit's opinion, researchers with backgrounds in statistical physics and in processes in fluid-rock systems respectively should make a very fruitful combination, providing a splendid opportunity to establish an environment for research into geological processes and complex geological systems.

Participants:

- Professor Bjørn Jamtveit, University of Oslo (leader)
- Professor Jens Feder, University of Oslo
- Dr. Paul Meakin, USA
- Dr. Eirik Flekkøy, University of Oslo
- Dr. Dag K. Dysthe, University of Oslo
- Dr. James A. D. Connolly, ETH-Zürich
- Dr. Yuri Podladchikov, ETH-Zürich
- Professor Enrique Merino, University of Indiana, USA
- Dr. Steve Miller, ETH-Zürich
- Professor Alan Thompson, ETH-Zürich
- Dr. Anders Malthe Sørensen, University of Oslo
- Professor Torstein Jøssang, University of Oslo

How does life work?

Life sciences may be mankind's most important field of endeavour. We want to understand how living organisms function in order to benefit from the knowledge in our daily lives, writes Professor Yuri Galperin.



Molecule wheels – organic material works mechanically, as shown here. The molecules rotate on a surface. (Ill: IBM Zurich)

The key problems – how live organisms operate, what is normal and what is wrong for them, what use one can make in one's daily life of the laws that apply to living nature – are the centre of attention of many biologists, physicists, chemists and other researchers.

One of the most difficult problems where research into living organisms is concerned is so-called non-invasive probing. The commonest experimental techniques are not suitable for studies of live systems because they require samples, extracts which are not alive at the time of the experiment. It is modern physics which has provided the tools for genuinely non-invasive investigations. They include spatially-resolved magnetometry.

Any activity in the human body is accompanied by small electric currents, so-called bio-currents. These electric currents produce tiny local magnetic fields, which can be detected by modern instruments. Knowing the distribution of the fields one can in principle reconstruct where their sources are located and in that way find whether any changes have taken place in the organism. An alternative method is to tag biomolecules with magnetic tags and then follow their movements.

Contact between super conductors

In either case, it is crucially important to measure the spatial distribution of the small magnetic fields. That can be done using so-called superconductor quantum magnetometers. Important components in such instruments are very small and highly accurate point contacts between two superconductors. It is now possible to create such contacts thanks to mesoscopic physics and the development of technologies on a nanometre scale. In the CAS physics group, Niklas Lundin and Yuri Galperin are studying the properties of small contacts between superconductors.

Another important field of inquiry in mesoscopic physics concerns how large organic molecules are absorbed by various surfaces. This is especially important because many processes begin on surfaces or at interfaces. What are the properties of individual live molecules, the building blocks of life organisms? How do such molecules interact, how do they assemble to form live tissue?

The tunnel microscope

Enormous progress has been made in this area in the last few years. One of the inventions which made these advances possible is the tunnel microscope, an invention for which Ernst Ruska, Gerd Binning and Heinrich Rohrer were awarded the Nobel Prize in 1986.

The underlying tunnel microscope concept is relatively simple, being based on monitoring the electric current from a sharp point and from the surface. The current is very dependent on the distance between the tip and the nearest object on the surface. This technique enables one, in particular, to study individual organic molecules. It appears that the electric current through such molecules is heavily dependent on their mechanical movement.

Shuttle transfer of electrons

From studies of such movements, important information can be gained about intermolecular forces, in which group members Robert Shekhter, Leonid Gorelik, Mats Jonson and Andreas Isacsson of the Chalmers University of Technology at Gothenburg are taking a special interest. They predicted a phenomenon they have described as a kind of shuttle transfer of electrons, which has since been confirmed by experiment.

This is actually a starting point for research into a wide range of electromechanical processes involving organic molecules. Interest in this field is growing by the day, and some interesting phenomena have been discovered. Among them are the so-called molecular motors, such as the molecules rotating on a surface shown in the illustration. Such systems are important to our understanding of numerous processes in biological systems, as well as holding out promise for the development of new electronic applications.

YG

Ole-Jørgen Skog new Scientific Director at the CAS

Sociology professor Ole-Jørgen Skog (54) has been appointed Scientific Director at the Centre for Advanced Study, and will take up his duties on 1 August 2000. Skog has been a professor in the University of Oslo's Department of Sociology and Human Geography since 1995, in addition to holding a chair at the Department of Sociology of the University of Stockholm. Skog's principal research field has been the sociology of deviance, with the emphasis on alcohol, drugs, suicide and violence. Before joining the University of Oslo he was Scientific Director at the National Institute for Alcohol and Drug Research in Oslo.

The post of Scientific Director at the CAS is a new one, for a three-year term, intended to strengthen the Centre's research administration, and to broaden its contacts with research environments and the authorities. The Scientific Director will also engage in work relating to the Centre's three areas of research as well as in his own research.

There will be a fuller presentation of Professor Ole-Jørgen Skog in the next CAS Newsletter.

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Oran Young is much sought after as an adviser on international environmental management and is considered one of the founders of research into international regimes. Photo: Ellen Stokland

Expert scientist at the CAS

Continued from the front page

"Whereas most specialists focus on very limited areas, Young has an excellent overview which is very valuable to a research group like ours. His comments and ideas have been very helpful to everyone else in the project.

Oran Young has always been a solution-seeker, and believes that cooperation between different research communities is fundamental to finding good workable solutions to the problems confronting society.

"Global environmental change has made international cooperation and regulation absolutely essential," he says. "Cooperation between the natural and social sciences is therefore also important: while the social sciences seek among other things to explain human action, the natural sciences tell us about its (harmful) effects. Both kinds of knowledge are fundamental to our ability to meet global environmental change with the right instruments."

Varying degrees of success

International environmental regimes have produced very varied results, with Young describing some as highly successful and others as failures. "But we have also learned from the negative experiences, " Young says.

For a regime to achieve the desired effect, it is important for the rules to be easy to enforce. Young points to the convention on oil emissions from cargo ships, first adopted in the 1950s. The regime laid down guidelines which the captains were supposed to adhere to. But the rules were not followed, and with emissions taking place far out at sea, it was practically impossible to identify the culprits. The regime was a failure.

"In the 1970s the regime was changed," Young tells us. "Rules were adopted which made it compulsory for oil tankers to carry equipment which made emissions unnecessary. Ships lacking such equipment would be refused insurance and lose in value. This amendment to the rules increased the regime's effectiveness considerably: the system became transparent in that it was made easy to catch the lawbreakers, besides which responsibility was shifted to the owners, who found it uneconomical to break the laws."

Need to modify agreements

Eager though he is to solve environmental problems, Oran Young admits that it is often not possible to win support for the best solution.

"Some cases are more politically sensitive than others, which prevents the optimal regimes from being adopted," Young says. "So we also take into account what it will take for a regime to be adopted and ratified. Sometimes sets of rules have to be substantially modified if we are to have any hope of their being accepted."

The Kyoto Agreement on the regulation of CO2 emissions is a good example. "Although the agreement is very modest, there is a very real danger that it will not be ratified by all the signatory countries," says Oran Young, who has close contacts with the authorities of several countries and is regarded as a neutral adviser with the highest scientific integrity.

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2000-2001 new research

Decision Making Under Uncertainty

Professor Stein W. Wallace of the Norwegian University of Science and Technology (NTNU), Trondheim, will be heading next year's social sciences group.

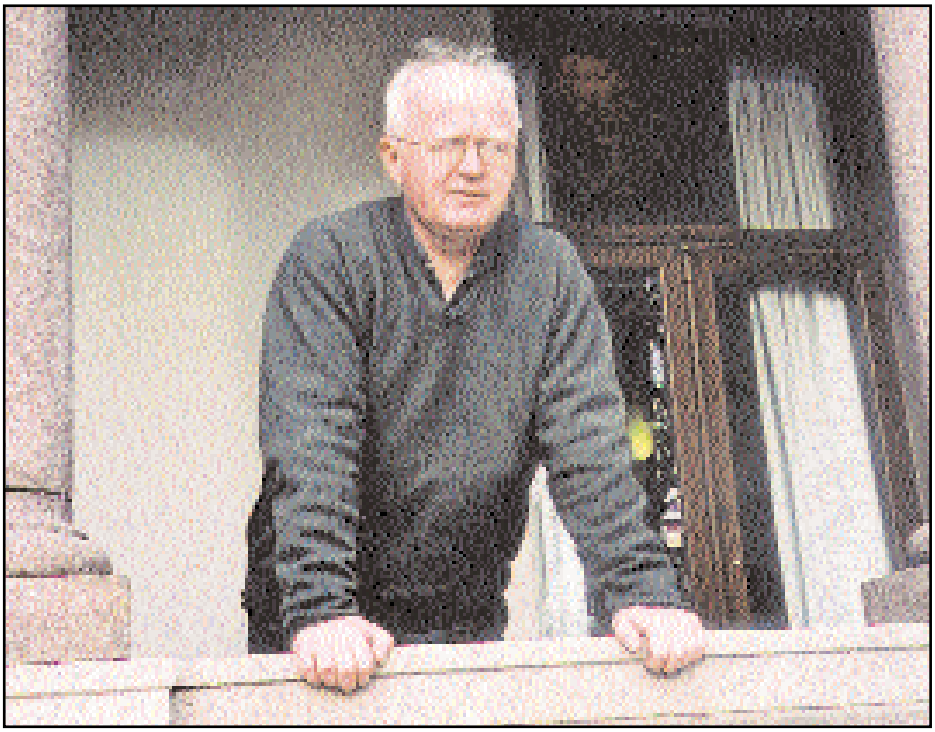
How do you decide when it's best to leave home for the bus stop so as not to have to wait too long, while on the other hand keeping the risk of missing the bus acceptably low? How does an oil company set about choosing a platform solution for the North Sea, and how does a snowboard manufacturer set the price of his latest model?

Though decisions taken in conditions of uncertainty are extremely complicated, that does not stop us from living with them all day without giving them much thought. Some decisions are based on simple rules of thumb which we apply almost unthinkingly, while others are based on complicated mathematical models.

The project aims to exploit expertise in both the social and the natural sciences in order to develop better decision-making models for problems in which uncertainty is a central theme. The group will focus on the collection, processing and presentation of stochastic data, and work on how complex stochastic models should be designed to enable users to derive the greatest possible benefit from them and organizations to adapt them to their structures. The group consists of scholars with extensive experience in the use of quantitative models, in the presentation of data, and in organizational psychology.

Participants:

- Professor Stein W. Wallace, NTNU (leader)
- Professor Julia Higle, University of Arizona, Tucson, USA
- Professor Yannick Frein, Institut National Polytechnique de Grenoble, Frankrike
- Professor Stein Bråten, University of Oslo
- Professor Les Foulds, University of Waikato, New Zealand
- Professor Jan Hovden, NTNU
- Professor Horand Gassmann, Dalhousie Universitetet, Halifax, Canada
- Professor Thorkell Helgason, the Icelandic Institute of Energy Research
- Senior lecturer Stian Lydersen, NTNU
- Dr. Ragnar Rosness, SINTEF, Trondheim
- Dr. Kjetil Høyland, Gjensidige Asset Management, Oslo
- Research scholar Michael Kaut, NTNU
- Research scholar Bård Reitan, NTNU
- Research scholar Erling Pettersen, NTNU



Sociology professor Aanund Hylland has taken over as Chairman of the Board of the CAS. (Photo: Ellen Stokland)

Accomodation for scholars
Each year the CAS finds accommodation for 10 to 12 visiting scholars, some of whom come alone while others bring their families. If you are planning to let a fully furnished apartment or house for a shorter or longer period from 1 August 2000, please get in touch with the CAS.

Versatile new Board Chairman at the CAS

Professor Aanund Hylland took over as CAS Board Chairman at the beginning of this year. The new chairman has a broad academic platform and a high degree of commitment.

Aanund Hylland – originally trained as a mathematician – has through the years built bridges between several subjects, including political science, economics, law and mathematics. He took an early interest in questions of research policy, and as a representative of the "radical scientists" was elected president of the student parliament for 1970-71.

His interest in decision-making and voting procedures, for democracy and government, soon brought him as a research scholar to the Department of Political Science, and in 1976 he moved to Harvard and obtained a Ph.D at the John F. Kennedy School of Government.

Returning to Norway in 1980 he joined and has since remained at the Department of Economics – by chance, according to the professor himself. From 1996 to 1998 he served as Dean of the Faculty of Social Science, and the energetic professor is currently serving academic organizations in three different capacities. And as if that were not enough, he constantly undertakes consultant assignments for international committees and councils engaged in the development of democracy. He already has a journey to Cuba on this year's schedule.

Annund Hylland has never been bothered by leisure problems, but whenever he can he cultivates his interest in opera. He would have preferred to see Norway's new opera located on Oslo's west railway station site, but has refrained from taking part in that discussion.

"But the order of voting did attract my attention," he remarks with a smile.

CAS running smoothly

Professor Arild Underdal, currently heading one of the CAS research groups, has worked with Aanund Hylland before, and believes the Centre has found a Board Chairman who is both dynamic and systematic. "He has the important capability in a chairman of being able to keep debate to the point, as well as a rare blend of qualifications with which to bridge gaps between disciplines," Underdal says.

Aanund Hylland for his part thinks CAS activities are running smoothly and sees no need to initiate sweeping changes. In his opinion the Board's main task will be to obtain increased grants, so as to give the research groups freer hands financially and enable them to invite more prominent – and expensive – scholars, among other things from the United States.

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ISSN: 0804-3272

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The CAS Newsletter
Editor/layout: Ellen Stokland
E-mail: redaksjon@shs.uio.no
Printed by: EKB Grafisk AS, Oslo
Circulation: 8,500 (Norwegian) 1,000 (English)

Published twice yearly, the Centre's Newsletter aims to provide information on activities at the Centre and to promote closer contacts between research environments.