

Remembrance of things past

■ Some five or six years ago the remains of an approximately 1400-year old library were carried on the back of a donkey from Afghanistan through the Hindu Kush range of mountains. The Norwegian collector Martin Schøyen ensured that these invaluable manuscripts were brought to safety, and now these cultural treasures are being studied by an international research group at the CAS. "The collection has been called "Buddhism's Dead Sea Scrolls", since both the age of the manuscripts and their historical significance can be compared," says Professor Jens Braarvig.

Read more on pages 2-3



Photo: Bjørne Røenge

The Afghan manuscripts span a period of 600 years, from the first to the seventh century. Professor Jens Braarvig (right) is in charge of the research group at the CAS, and is among other things getting good help with scanning and cataloguing from the postgraduate student Henrik Mathisen.

CAS seeks proposals for group leaders

The Centre for Advanced Study organises basic research on an international level. In December this year the Board is to evaluate candidates to head research groups that are to spend one year at the Centre in the research year 2004/2005.

The group leaders are chosen from among leading Norwegian researchers within the fields of the humanities, mathematics/natural science and social science/law. The groups are to have an international composition and will be fully funded by the CAS in co-operation with the Norwegian universities. It is not possible to conduct experimental research at the Centre.

The CAS is now asking for proposals for suitable candidates to serve as leaders. Proposals should include:

1. The name(s) of the candidate(s), place of work and CV.
 2. A brief description of the research group's theme and central problems posed in the project.
- More information is to be found on our Web pages: <http://www.shs.uio.no> Questions may be addressed to the Chairman of the Board, Professor Aanund Hylland, tel.: 22 85 42 71, e-mail: aanund.hylland@econ.uio.no, or to our Scientific Director, Professor Ole-Jørgen Skog, tel.: 22 12 25 11, e-mail: o.j.skog@shs.uio.no

The closing date for the submission of proposals is 23 November 2001.

This year's CAS groups

Buddhist manuscripts in the Schøyen Collection: This group is headed by Jens Braarvig, a specialist in the history of religion, who is a professor in the Department of Culture Studies at the University of Oslo (UiO). Presentation on pages 2-5.

The Constitutional studies – The constitution as norm: This group is headed by Professor Eivind Smith of the Department of Public Law at the UiO. Presentation on page 6.

Non-commutative phenomena in mathematics and theoretical physics: This autumn's group is headed by Magnus B. Landstad, a professor of mathematics at the Norwegian University of Science and Technology in Trondheim (NTNU). Presentation on page 7.

Some five or six years ago the remains of an 1400-year old library were carried on the back of a donkey from Afghanistan through the Hindu Kush range of mountains. This library contained inter alia the oldest Indian writings known in the world, but was in danger of being destroyed. Now these cultural treasures are being studied by an international research group at the CAS.



Buddhist cultural treasures re-created in Oslo

"These Buddhist manuscripts stem from a monastery library that judging by the evidence was destroyed in the eighth century. It is illustrative that some people call the collection "Buddhism's Dead Sea Scrolls", for both their age and their historical significance can be compared. By means of palaeographic methods we have ascertained that the manuscripts span a period of 600 years, from the first to the seventh century," says Professor Jens Braarvig of the University of Oslo. This highly respected researcher in the History of Religion is in charge of the CAS research group "Buddhist Manuscripts in the Schøyen Collection", which is to spend the coming year revealing and systematising the treasures in this unique material.

Palm leaves, birch bark and parchment

The collection consists of approximately 3000 fragments of several hundred books from a library that judging by the evidence was built up by the Buddhist Mahasamghika sect. The library was probably destroyed in connection with the Muslim invasion of Afghanistan in the eighth century, but the fragments that did survive were incredibly well preserved in the cold, dry climate of the high Afghan plains. The remains were found in a cave roughly 300 km north of Bamiyan, where in March 2001 the Taliban authorities in Afghanistan blew up two Buddha statues

that were more than 50 metres high and almost 2000 years old.

"The fragments came from Afghanistan to Norway in a completely unsorted state after 1400 years of total neglect. There are some almost complete books in the collection, but there are a lot of micro-fragments. Our task is to restore the original manuscripts to the extent that this is possible, and we will be comparing them with other editions of those manuscripts that are known from earlier. But there are also some completely unknown texts from Buddhism in the collection," says Professor Braarvig.

The old manuscripts are on the whole written on palm leaves or birch bark, gathered into books by means of a thread passed through a hole in all the pages. There are also some fragments of texts written on parchment, which, incidentally, is a highly un-Buddhist material.

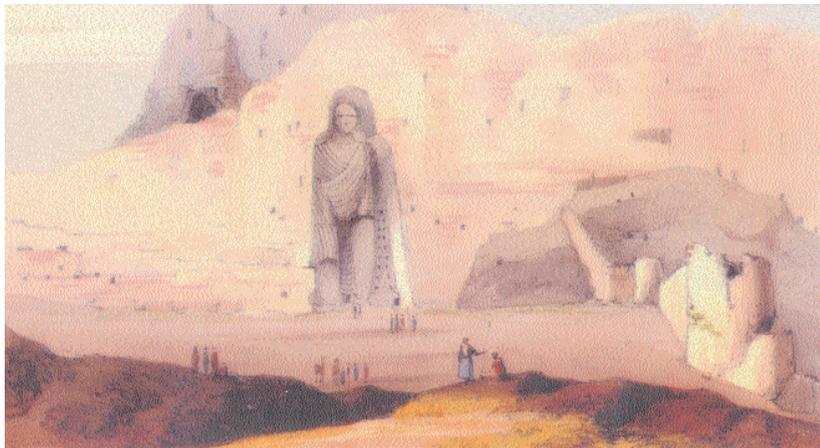
"The Buddhist research communities heard of the Bamiyan find during a conference in 1996. The initiative was taken to form a committee consisting of Professor K. Matsuda, Professor J. U. Hartmann, Dr L. Sander and myself. I then made contact with the owner Martin Schøyen, who was very positive about our request to study and publish the collection. This committee is still co-ordinating the project and is part of the research group at the CAS," explains Professor Braarvig.

Cultural exchange

"The writing system in the collection can be divided into two main groups. In the one group the writing is in Kharosthi script, which was in use up to the third century. In the second group the writing is in Brahmi writing, which were developed at roughly the same time, but continued to be used in the following centuries. Brahmi has provided the basis for many other Indian writing systems, and the manuscripts in the Schøyen Collection can therefore give us new insight into the origin of today's written culture in India," says Jens Braarvig.

Professor Braarvig gave the main lecture at the opening of the Centre for Advanced Study's tenth academic year on 5 September. In his lecture he inter alia emphasised that today's Afghanistan, which Europeans and Americans see as a war-torn and unhappy area on the periphery of the world, was both central and significant earlier in history.

"This area was crossed by both the Silk Route between Europe and China and the main thoroughfare between China and the Indian Continent. The Silk Route brought Buddhism from India to China, and on the way the holy Buddhist writings were translated into Khotanese, classical Turkish, Tibetan and Mongolian in a process marked by understanding and mutual respect. People travelled a lot in the old days too, and the cultural exchanges were perhaps stronger at that time



The Buddhist manuscripts in the Schøyen Collection stem from a cave in the same area as the famous Bamiyan Buddha that was destroyed by the Taliban regime in Afghanistan in the summer of 2001. The Buddhist "Dead Sea Scrolls" (left) were mainly written on palm leaves and birch bark, but a few of the manuscripts are also written on parchment. The ink has lasted incredibly over the centuries. (Photo: Tom Jensen)

because the actual journey took so long," Professor Braarvig observes.

Cultural oases

The lively exchanges led to the establishment of both libraries and other Buddhist cultural monuments along the Silk Route. "Our material contains all the genres that are known from earlier in Buddhist literature: Buddha's own words (Sutra) and the monks' rules of conduct (Vinaya), as well as a rich selection of stories and extensive literature in the form of commentaries. Some of the Schøyen texts are totally unknown and difficult to identify, some have been in existence from earlier times in Chinese or Tibetan translation, while others can be found in parallel versions in Sanskrit or other languages. A very interesting manuscript is written in Bactrian, which is an Iranian language written with Greek letters," says Jens Braarvig.

"In our daily lives we're not always conscious of how important history and tradition are for us - but when an enormous statue of Budd-

ha, which was part of our global cultural heritage, was blown to pieces because of maybe a misunderstood dogma, the whole world reacted with shock. In the midst of this absurd event there are perhaps grounds for optimism, because it showed that the world community does have a conscience linked to the preservation of our common cultural traditions," said Professor Braarvig in his speech on 5 September. "The manuscripts in the Schøyen

Collection do not only have historical interest, but are also personal greetings from the monks who wrote so neatly on palm leaves and birch bark almost 2000 years ago."



Researchers: In the front: Margarita Vorobyova-Desvatovskaja (St. Petersburg), Siglinde Dietz (Göttingen), Lore Sander (Berlin), Colette Cox (Washington), Jens Braarvig (Oslo). The middle row: Stefan Baums (København), Richard Salomon (Washington), Kazumoku Matsuda (Kyoto), Torkel Brekke (Oslo). Behind: Andrew Glass (Washington), Klaus Wille-Peters (Göttingen), Eli Franco (Wien) og Jens-Uwe Hartmann (München). The group also consists of among others Gudrun Meltzer (Berlin), Olle Quarnström (Lund), Paul Harrison (Canterbury, New Zealand), Jonathan Silk (Yale), Shogo Watanabe (Tokyo), Henrik Mathiesen (Oslo), Ulrich Pagel (London) and Jens Østergaard Pedersen (Copenhagen).

"History calls out to us"

"We can never know exactly how people lived at the time these manuscripts stem from. But it lies in the nature of man that we can't stop the attempts to find out more about them," says Professor Jens Braarvig.

Professor Braarvig considers himself lucky that the manuscripts in the Schøyen Collection are in safe and sound keeping in Norway.

"At the risk of not being absolutely politically correct, I dare to assert that in our day and age it is the European intellectual tradition that is most concerned about safeguarding ancient cultural treasures. But we must not forget that Western science and tradition are built on our heritage from Antiquity, and it was in fact the Arabs who took care of this right from the 8th century and almost until the Renaissance," Jens Braarvig points out.

Jens Braarvig is a professor of the History of Religion in the Department of Culture Studies at the University of Oslo, and has Buddhist literature as one of his special areas. In addition he knows Sanskrit, Tibetan, Chinese, Greek, Hebrew, Latin, Achaean, Sumerian, Hittite and Persian.

"After all, I am a professor of the History of Religion, so it's my simple duty to know these languages," he says somewhat apologetically.

"The driving force behind the study of these manuscripts is that history calls out to us,



"If there's one thing history can teach us, it is that books and literature are something that must be preserved. If they aren't, they are lost," says Professor Jens Braarvig.

and it lies in the nature of man that we must try to understand its call. What's more, these languages have to do with our common memory, and such studies can contribute to enriching our present language. And if we have a rich language, then our communication will also become rich," Professor Braarvig believes.

The research group that is studying the Schøyen Collection has already published one volume of reproductions and translations of the Buddhist manuscripts, and the plan is to publish the next volume in February 2002. After that the volumes will be published in rapid succession, and altogether it will be a matter

of some 10 to 12 publications.

"This material has provided us with a unique opportunity to build up an international research community, and I'm now hoping that the right people in the Ministry of Education and other authorities will give us the chance to develop this further. But it is unfortunately the case that we have a tendency to take books, literature and libraries for granted in



The Schøyen Collection contains inter alia an ancient parallel to the Norwegian Pharmacopoeia, more specifically a small collection of medical diagnoses and prognoses from Babylon c. 1900-1700 BC. Here it says inter alia:
*- If a man's abdominal cavity is loose, he is in a critical condition
- If a sick man is relaxed in the daytime but is ill from the moment darkness falls and at night, he is being attacked by a ghost*

our times. If there's one thing we can learn from the pre-history of the fragments we are studying today, it is of course that books and literature are something that must be preserved - otherwise they are lost. So I think it's wonderful that the state authorities have put up a splendid building at Blindern, but it's sad that the Library doesn't get enough money to buy in books. It's quite simply scandalous!", Professor Braarvig points out.

A unique collection

The Buddhist manuscripts from war-ravaged Afghanistan are one of the latest additions to the Schøyen Collection, which is the largest private collection of manuscripts to have been established in the 20th century. The manuscripts cover a time-span of 5000 years and contain more than 12,500 handwritten documents from the whole world.

The collection has been built up by the Norwegian Martin Schøyen, and there are hardly likely to be any other collections in the world with equally great variation geographically, linguistically, textually and materially. The collection contains manuscripts written not only on paper-like materials but also on clay, metal, wood, bone, stone, glass etc. The greater part of the collection was acquired at auctions after 1985, but Schøyen's interest in collecting was aroused when he was only 15. "I was in Florence with my parents. On a vegetable barrow lay a pile of old books for sale for just a few pence each. It turned out that they were books from the 16th century," he said in an interview with the Norwegian daily newspaper, Aftenposten.

Martin Schøyen is particularly interested in early editions of manuscripts and is inter alia in possession of the world's oldest collection of laws from 2050 BC, the oldest Greek alphabet,

and a manuscript of the world's first named author - a princess who lived in Sumer around 2200 BC. All of the world's four oldest river valley civilizations are represented: Egyptian proto-hieroglyphics from 3600-3200 BC, pictographic writing from Sumer around 3200 BC, writings from the Indus valley around 2100 BC, and Chinese writing on jars from approx. 2000 BC.

Parts of the collection are located in universities and libraries in several countries, but mainly the National Library in Oslo, where the manuscripts are to be available for researchers. The collection has also been presented in New York, London, Paris and Bonn. Inter alia a scientific series has been established and this is published in Norway under the title "Manuscripts in the Schøyen Collection Series". Professor Jens Braarvig is the editor for the series.

Martin Schøyen's wish for the future is that any income derived from sales will be put into a humanitarian fund. "I have no plans to sell at the moment, but the day that happens, the money will go into the Schøyen Human Rights Foundation, which is to hand out money for good causes such as freedom of expression, human rights and work in developing countries," said Schøyen in the Aftenposten interview.

The National Library's survey of the Schøyen Collection:
<http://www.schoeyen.net/>

Prize-winning CAS mathematician

On 8 October the mathematician Ola Bratteli (54) was awarded this year's prize from Professor Ingerid Dal and Sister Ulrikke Greve Dal's endowment for the support of humanistic research. Professor Bratteli is one of Norway's most famous mathematicians, and among other things he is participating in this autumn's research group "Non-commutative phenomena in mathematics and theoretical physics" at the CAS.

"It was naturally very nice to be given this recognition. As a matter of fact I was a bit surprised at the award, because earlier this prize has on the whole gone to younger and perhaps more "up-and-coming" mathematicians," says Ola Bratteli.

Ola Bratteli is a professor in the Department of Mathematics at the University of Oslo, and the grounds for awarding the prize to him are inter alia that he is an unusually productive mathematician with more than 100 publications in addition to three books. He is now writing his fourth book in co-operation with Palle E. T. Jørgensen of the University of Iowa. The book will be entitled "Wavelets through a Looking Glass: The World of the Spectrum" and the book is planned for publication in the spring of 2002. "The target group is advanced students of mathematics," says Professor Bratteli.

The grounds for the award of the prize also state that something that distinguishes Bratteli's research, in addition to its high quality, is his international network of contacts. His research has the whole time been linked to the field of operator algebras, yet at the same time it has great breadth. His name will always be linked to the concept of "Bratteli diagrams", which he introduced in his master's thesis, and which describe a class of C^* algebras completely.

The endowment was established by the founders by donation and bequest, and it is administered by the University of Oslo. According to the statutes the disposable share of the yield is to be awarded as an academic prize for outstanding work within the fields of comparative Indo-European linguistics, theoretical mathematics and rationalist philosophy.



The mathematician Ola Bratteli has been awarded this year's prize from Professor Ingerid Dal and Sister Ulrikke Greve Dal's endowment for the support of humanistic research.

Like societies can have unlike constitutions

The Nordic countries look very much the same, with forms of government that are largely based on the same fundamental values concerning democracy and human rights. "Yet these likenesses do not appear in the constitutions, for they are very different," says Professor Eivind Smith.

This is one of many examples to illustrate the fact that constitutions may have unlike meanings in like societies, or vice versa. Eivind Smith is a Professor in the Department of Public Law at the UiO, but this year he is in charge of the research group in social science and law at CAS. The theme of the project is constitutions (basic Acts), their normative character and the impact of these legal norms in the legal system and in society otherwise. This is an area that has gained renewed topicality in recent years, *inter alia* on account of increasing interest in human rights, the debate on European integration and the democratisation in Eastern Europe.

"The Nordic constitutions have different historical origins, they are different in scope and structure, and to some extent they assign different roles to the courts in each country. The most obvious difference is perhaps their age, since Norway can boast of having the oldest constitution right from 1814, and its main structure has to a great extent been retained. However, the Norwegian Constitution has been amended very many times, he says.

The constitution in different societies

"One of the aims of this research project is to study what it means to have basic Acts/constitutions, what types of constitution are found, and what role they may play in different societies. We shall be concentrating on Europe and the United States, but we shall also be having a crack or two at other parts of the world," says Professor Smith.

"In this connection it is worth noting that the study of political science in the Nordic countries has for many years placed extremely little weight on this subject area. Large parts of today's political science are very



Participants in the research group: From the left Ågíst Thór Árnason (Reykjavikur Akademi-), Bjørn Erik Rasch, Trond Nordby and Eivind Smith (Oslo), Caroline Taube (University of Uppsala). The research group also consists of *inter alios*: Svein Eng (Oslo), Jon Elster and John Huber (Columbia University), Aleksander Peczenik (University of Lund), Olaf Petersson (SNS Stockholm), Egedius Kuris (Constitutional Court of Lithuania), Guy Scoffoni (Université d'Aix-Marseille III) and Michel Troper (Université de Paris X). Photo: Bjarne Røsp

much empirically oriented, with the emphasis on describing the systems of government as they are assumed to function in practice. The legal basis has not been much in focus, which means that one – but obviously not the only – factor for better understanding has been excluded right from the starting point. Perhaps this project can contribute to some change in this area," says Professor Smith.

The Norwegian Constitution is not only the oldest in the Nordic countries – it is also different in another and perhaps more important way. In Norway we are used to having a Constitution that is not only a political document but also an "Act", in the sense that it can be used by the courts as a tool in resolving conflicts. This means *inter alia* that Norway cannot in principle have statutes that are contrary to the Constitution, for it is possible to challenge such statutes in the courts and in the last instance in the Supreme Court.

A tradition under pressure

"In Europe otherwise the tradition has been a different one, in the sense that the constitution could not be reckoned as anything but a document containing rules about the state's form of government, but without any person's having the right to have the question of the relations

hip of legislation to the constitution decided by independent courts. In countries such as France and the Netherlands this tradition has in principle been preserved: As long as the statutes have been passed by their national assemblies, it is the statutes that apply," says Smith.

Most countries in Europe outside the Nordic area have, however, abandoned this tradition, and today separate constitutional courts play an important part in many countries. In addition to this come important international courts such as the European Human Rights Court in Strasbourg. Against this background we can in other words say that the rest of Europe has moved closer to the Norwegian tradition that statute law must keep within the limits that follow from the Constitution and other superordinate rules of law.

"The way practice has now developed, the Norwegian Storting has a fairly high degree of freedom itself to interpret the Constitution. We have gradually moved pretty far in the direction of a constitutional norm where the national assembly is sovereign," says Professor Smith. "In this way we can say that Norway is on its way from Eidsvold to Westminster, where the basic constitutional rule is precisely that Parliament may do what it likes, legally speaking", he says.

When the order matters

"It doesn't matter whether you put your socks or your hat on first. But it does matter whether you put your socks or your shoes on first," says Professor Magnus Landstad.

So Professor Landstad has formulated a mathematical rule that sharply contradicts what we learnt at school, namely that "the order of the factors doesn't matter". At school we were told that many everyday mathematical problems could be solved irrespective of what sequence or order we operated with in doing our calculations: 50 litres of petrol cost, for example, both 50 x NOK 8.90 and NOK 8.90 x 50. It is also the same whether you add two and three or three and two.

But this rule certainly does not apply everywhere. Magnus Landstad is Professor of Mathematics at NTNU, and this autumn he is in charge of the CAS research group "Non-commutative phenomena in mathematics and theoretical physics". Here researchers from home and abroad have the opportunity to dig into areas where the order of factors does matter – and there are many such areas. "This is an enormous international field of research, and an area in which Norway lies at the forefront," says Professor Landstad. The project is part of the marking of the 200th anniversary in 2002 of the birth of Niels Henrik Abel, and it is one of several arrangements that will

put Norway on the mathematical world map in the time ahead.

Two research groups

"Heisenberg's Uncertainty Principle is a fundamental example of the non-commutative problems within physics: It's not possible to measure both the position and the velocity of a particle at exactly the same time in the same experiment," Professor Landstad explains.

In the course of the project, researchers from a number of countries will be staying at the CAS for brief or longer periods. Most of the work will take place under the auspices of the two research groups in the autumn of 2001 and one research group that will be working in the spring of 2002. In addition a number of workshops and short seminars are being arranged.

The axes of cognition

Among other things the CAS researchers are to go deeply into non-commutative phenomena with designations like "piecewise hereditary algebra", "2-tori" and "Möbius strips". Much of this is Greek to non-mathematicians,

perhaps with the exception of the Möbius strips, which have become



■ Participants in the mathematics group in the autumn of 2001. Front row from left: Magnus B. Landstad (NTNU), Idun Reiten (NTNU), Klaus Ringel (Bielefeld, Germany), Sverre O. Smalø (NTNU). Back row from left: Øyvind Solberg (NTNU), William Crawley-Boevey (Leeds), Andrzej Skowronski (Torun, Poland), Helmut Lenzing (Paderborn), Aslak Buan (NTNU). In addition the group consists of: Birge Huisgen-Zimmermann (St. Barbara, USA), Dieter Happel and Luise Unger (Chemnitz, Zwickau, Germany), Sergej Neshveyev (Kharkov, Ukraine), Jean Renault (Orleans, France), Ola Brateli (Oslo), Palle Jørgensen (Iowa, USA), Michael Müger (Amsterdam) and William Arveson (Berkeley, USA).

■ The mathematics group in the spring of 2002: Henning Haar Andersen (Århus University), Geir Ellingsrud (Oslo), Gunnar Fløystad (Bergen), Mikhail Kapranov (Northwestern University), Steven Kleiman (Massachusetts Institute of Technology), Hironaka Nakajima (Kyoto University), Alexei Rudakov (NTNU), Stein Arild Strømme (Bergen, group leader), and Jan-Magnus Økland (Bergen).

Norway's greatest genius

Niels Henrik

Abel was the greatest mathematician fostered by Norway and the Nordic countries, and he ranks on a level with the greatest mathematical geniuses ever.



The Norwegian government has put NOK 200 million into an Abel memorial fund, and the interest earned will be awarded each year as an Abel Prize to one of the most important mathematicians of our time.

Abel was born on 5 August 1802 at Finnøy near Stavanger, and died of tuberculosis at the age of only 26. The interest in mathematics was aroused when he was a pupil of 16 at the Cathedral School in Christiania, and his first work on integral equations was published in 1823. Abel is most famous for his work on the addition theorem, equations of the fifth degree, and elliptical functions.

famous thanks to the bizarre drawings of the Dutch artist Maurits Escher.

And those who wonder why mathematicians are attempting to push the borders of our cognition farther along such axes may well stop for a moment to ponder on what our modern world would have looked like without mathematics.

The Centre for Advanced Study

The Centre for Advanced Study (CAS) is an independent foundation with a board appointed by the Norwegian Academy of Science and Letters (NASL) and the Council for Universities and Colleges. Prominent researchers from Norway and abroad are invited for one-year stays to engage in research in the Centre's premises in Drammensveien in Oslo, where the CAS is housed in the turret section of the Academy's villa.

Each year the Centre's activities are organised in three research groups, each with from six to ten members. The work of each group is planned and organised around a common theme and headed by one or more outstanding researchers.

The groups are chosen from each of the following three areas:

- The Humanities
- Social Sciences/Law
- Natural Sciences/Mathematics

The CAS is exclusively a basic research institution, where the participants have no other obligations than their own research. The Centre for Advanced Study is administered by a permanent staff of three and was officially opened on 1 September 1992.

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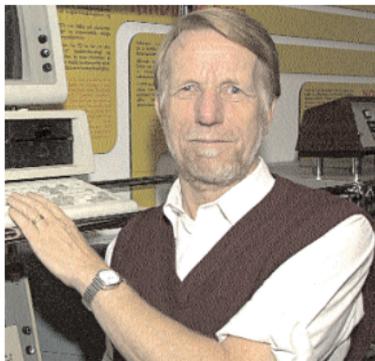
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University of Oslo's prize to CAS researcher

The University of Oslo (UiO) has awarded this year's Research Prize to Professor Stig Johansson in the Department of British and American Studies. Professor Johansson was in charge of a language group at the CAS in the period 1996-1997.



Language researcher Stig Johansson has been awarded the UiO's Research Prize for 2001. (Photo: Ståle Skogstad)

Stig Johansson is well known both in Norway and internationally as a pioneer in the development of corpus linguistics, i.e. a branch of linguistics that seeks to exploit modern computer technology to build up huge collections of texts that are specially arranged for language research. This has opened up completely new possibilities of analysing language in use and inter alia of writing grammars that reflect how language is actually used.

"As early as the mid 1970s Stig Johansson had taken the initiative to bring about the creation of international networks and the establishment of journals for corpus-based linguistics. In co-operation with Knut Hofland at the University of Bergen he was also a pioneer

when it came to building up such text corpora and developing computer programmes so that they could be used for his own and other scholars' research purposes," to quote the wording of the grounds given for the award of the prize.

"The stay at the CAS was of great importance, because we had time to concentrate for a whole year on our work on parallel texts. We also had the opportunity to work as a group in an inspiring research community, and we had good possibilities of inviting external researchers for periods of time."

Contact committees for the CAS at the universities

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