Programme 2008

The Abel Prize Ceremony 20 May 2008

Procession accompanied by the «Abel Fanfare»
Music: Klaus Sandvik. Performed by three musicians from The Staff Band of the Norwegian Defence Forces

Their Majesties King Harald and Queen Sonja enter the Aula

Love's Alchemy
Text: John Donne, Music: Ketil Bjørnstad

Opening by Professor Ole Didrik Lærum
President of the Norwegian Academy of Science and Letters

The Prohibition
Text: John Donne, Music: Ketil Bjørnstad

The Abel Prize Award Ceremony

Professor Kristian Seip
Chairman of the Abel Committee
The Committee's citation

His Majesty King Harald presents the Abel Prize to John Griggs Thompson and Jacques Tits

Acceptance speeches by John Griggs Thompson and Jacques Tits to the Norwegian Academy of Science and Letters

Closing remarks by Professor Ole Didrik Lærum
President of the Norwegian Academy of Science and Letters

Sommernatt Ved Fjorden (By The Fjord)
Text and Music: Ketil Bjørnstad

Their Majesties King Harald and Queen Sonja leave the Aula

Procession leaves the Aula

Other guests leave the Aula when the procession has left

Professor Ole Didrik Lærum:

President of the Norwegian Academy of Science and Letters

Your Majesties, Excellencies, dear friends

Ars longa, vita brevis, - *(the life so short, the craft so long to learn),*- is the introduction to an old Latin discussion of medicine, but it is just as applicable to other subjects that also had their first great flowering in antiquity. It certainly applies to mathematics, a science that has been around as long as we have had written languages and numbers. The development of mathematics has also resembled a relay race with each new mathematician carrying the work of the previous one a little further. As otherwise in science, the development of the field has been the result of a great international fellowship.

Nearly 180 years ago, a pale, young man sat writing in a room at Frolands verk in Norway's Aust-Agder County. He had gone down there from Christiania to visit his fiancée at Christmas, but there he took sick. This was the mathematician Niels Henrik Abel, who already then at an age of 26 was internationally famous. He was well acquainted with the great European mathematicians of his time, and now he was busy writing down some important discoveries. When he was able to get back on his feet again, he sat down in the room and wrote for dear life. In a neat handwriting, he noted things down as best he could, even though he frequently coughed and felt weak. Early in January, he finished the task, and this was to be the last thing he wrote. Three months later, he was dead.

Abel's short life was full of adversity, family problems and financial worries. In his last year, he also had worries about gaining a permanent position - and not least worries because a dissertation that was supposed to be printed in Paris had disappeared. The main points in this manuscript were the last things he sat writing about. Until recently, he had been full of drive and enthusiasm. He looked forward to marrying his fiancée Christine and starting a family – and to continuing his great work in mathematics. Only now, as he approached the age of 27, did he understand that it was not to be.

There is something special about mathematics. The subject knows no geographical limits, and it cuts across all ages. Gifted mathematicians have made great discoveries already in their youth, and Abel is a good example of this. Yet the development of mathematics can also be a lifelong effort with important discoveries made at an advanced age. There are indications that work on the subject also stimulates the brain. Brain cells function better the more active they are. If we are fascinated by something and use our brain, it will continue to develop as long as we live.

It can take a long time after a discovery is made before it is generally accepted. The more epoch-making it is, the longer it may take. For that reason, Niels Henrik Abel would not have been likely to win the Abel Prize if he had lived today and his tuberculosis had not been cured.

When the Abel Prize is awarded for the sixth time today, it can be argued that the prize winners are especially deserving of the award; but they are in their best years, and it took some time before the great honour was awarded. The two of them are good illustrations of the fact that mathematics is not only a subject in itself, but also a necessary tool for the development of other subjects. In more and more scientific contexts, progress is dependent on our having tools for processing data and our being able to build models that describe the phenomena so that we can develop a theoretical foundation. Thus, mathematics is not only a bridge builder to other subjects, but also a glue that enables us to assemble new data into a coherent whole.

The objective of the Abel Prize is not just to reward those who have made the most important discoveries, but just as much to increase the understanding of mathematics' importance to society. This especially applies to school pupils, who very much need to be encouraged to work at a school subject that has come to be regarded negatively by many of them. Perhaps we should launch a new campaign and take our point of departure in the many mathematicians who have made important discoveries and are active at an advanced age, including our two prize winners today: mathematics is not just important – it is very good for your health!

Without further ado, I hereby wish to congratulate two especially deserving prize winners and wish them many fruitful mathematical years to come.

Professor Kristian Seip

Chairman of the Abel Committee

Your Majesties, your Excellencies, ladies and gentlemen,

The Abel Prize for 2008 is awarded to John Thompson and Jacques Tits for their profound achievements in algebra and in particular for shaping modern group theory.

Important breakthroughs in mathematics are often related to the discovery of amazing connections between apparently unrelated phenomena. The ability of mathematics and the great mathematicians to evoke the essence of a problem through abstraction and intellect are the qualities that lead to such seminal advances.

The birth of modern algebra is an almost magical intellectual achievement. Two ancient traditions, the art of solving equations and the use of symmetry, as shown for example in the Alhambra's tiled floors and walls, merged at the end of the eighteenth century when it was first conceived that the key to understanding even the simplest equations lies in the symmetry of their solutions. Our own Niels Henrik Abel and the Frenchman Évariste Galois, another great mathematician who died all too young, made masterly contributions to the realisation of this insight early in the nineteenth century. Eventually, the concept of a group began to take shape, the most powerful way of capturing the idea of symmetry. The underlying recognition was that symmetry must be understood as a collection of actions, different ways that we can move for example a square, without it appearing to be relocated, and that such a movement followed by another constitutes a third possible movement when the two are taken together.

Group theory played an important role in the development of twentieth century physics, from the understanding of crystal structures to the formulation of models for elementary particles and the forces that act between them. The idea of a group proved to be enormously fertile within the realm of mathematics as well. Groups have striking properties that relate many phenomena in different areas of mathematics.

Finite groups arise when we change the location of a finite number of objects according to certain rules. A well-known example is Rubik's cube, a challenging toy for both young and old, which spread like a pandemic around the world in the early 1980s. Linear groups are formed by symmetries that preserve an underlying geometry. These two types of groups, the finite and the linear, are the most important groups. In his research, John Thompson has concentrated on finite groups, while Jacques Tits has worked predominantly with linear groups.

John Thompson revolutionised the theory of finite groups and laid the foundation for the complete classification of finite simple groups, one of the greatest achievements of twentieth century mathematics and a project that was scarcely regarded as imaginable before Thompson and his collaborator, the now deceased Walter Feit, came upon the scene. Simple groups are the atoms from which all finite groups are built. The almost incredible conclusion is that all finite simple groups belong to certain standard families, except for 26 sporadic groups. Thompson and his students played a key role in revealing the fascinating properties of the sporadic groups, including the largest, the so-called Monster, often picturesquely described as a gigantic snowflake in 196,883-dimensional space.

Jacques Tits had a pioneering vision of groups as geometric objects. He introduced what is now called a Tits building, which encodes in geometric terms the algebraic structure of linear groups. The theory of Tits buildings is a central, unifying principle with an amazing range of applications within both group theory and other branches of mathematics and in fields such as theoretical physics and computer science. Tits's geometric approach was essential in the study and realisation of the sporadic groups, including the Monster. Tits established also the celebrated Tits alternative, which has inspired numerous variations and applications.

The achievements of John Thompson and of Jacques Tits's work are of extraordinary depth and influence. They complement each other together form the backbone of modern group theory.

The Musicians

Randi Stene

Randi Stene was born in Norway but now lives in Copenhagen, Denmark where she is a member of the Royal Danish Opera resident at the Copenhagen Opera House.

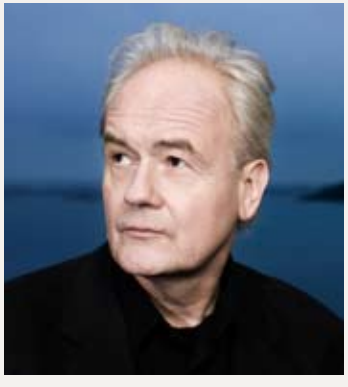
Randi Stene won international acclaim in 1993, singing Octavian at the Opera Bastille in Paris. Since then, she has performed at the Royal Opera House, Covent Garden, at 'The Proms'(Royal Albert Hall, London), the Metropolitan Opera in New York and the Théâtre du Châtelet in Paris. She has also sung with many of the world's leading orchestras in Berlin, Brussels, Edinburgh, Helsinki and Istanbul.

Lars Anders Tomter

Lars Anders Tomter's international solo career began in 1987 when he toured the USA and Germany with the prestigious Norwegian Chamber Orchestra under its conductor Iona Brown.

Since then, his appearances as a viola soloist have been greeted with great public and critical acclaim throughout Europe and the United States of America. Lars has performed at all the major concert halls in Europe, Asia and the USA including the Vienna Musikverein.

Ketil Bjørnstad



Ketil Bjørnstad made his debut at the of age of 16 in 1969 with the Oslo Philharmonic Orchestra, playing Bartok's Piano Concerto No 3.

Listening to the jazz musician Miles Davis inspired Ketil to compose his own music. He was encouraged to find his own style by the vibrant music scene in Oslo in the 1970s centred around the nightspot Club 7 where he met poets, painters and other jazz musicians.

There is something of the Renaissance man about Ketil Bjørnstad who is recognised as a unique figure in the arts in Norway. Classically trained as a concert pianist, he has recorded over 30 albums since 1973 including five volumes of solo piano as well as jazz and rock collaborations. Alongside his music career, Ketil is a prolific writer with over 20 novels to his name as well as poetry anthologies and essay collections.

As a jazz artist, Ketil has performed at major jazz-festivals all over the world. He has also toured Asia with guitarist Terje Rypdal and the USA with David Darling.

Photography: Hans Fredrik Asbjørnsen

Love's Alchemy

John Donne

Some that have deeper digg'd love's mine than I,
Say, where his centric happiness doth lie;
I have lov'd, and got, and told,
But should I love, get, tell, till I were old,
I should not find that hidden mystery.
Oh, 'tis imposture all!
And as no chemic yet th'elixir got,
But glorifies his pregnant pot
If by the way to him befall
Some odoriferous thing, or medicinal,
So, lovers dream a rich and long delight,
But get a winter-seeming summer's night.

Our ease, our thrift, our honour, and our day,
Shall we for this vain bubble's shadow pay?
Ends love in this, that my man
Can be as happy'as I can, if he can
Endure the short scorn of a bridegroom's play?
That loving wretch that swears
'Tis not the bodies marry, but the minds,
Which he in her angelic finds,
Would swear as justly that he hears,
In that day's rude hoarse minstrelsy, the spheres.
Hope not for mind in women; at their best
Sweetness and wit, they'are but mummy, possess'd.

The Prohibition

John Donne

Take heed of loving me ;
At least remember, I forbade it thee ;
Not that I shall repair my unthrifty waste
Of breath and blood, upon thy sighs and tears,
By being to thee then what to me thou wast ;
But so great joy our life at once outwears.
Then, lest thy love by my death frustrate be,
If thou love me, take heed of loving me.

Take heed of hating me,
Or too much triumph in the victory ;
Not that I shall be mine own officer,
And hate with hate again retaliate ;
But thou wilt lose the style of conqueror,
If I, thy conquest, perish by thy hate.
Then, lest my being nothing lessen thee,
If thou hate me, take heed of hating me.

Yet love and hate me too ;
So these extremes shall ne'er their office do ;
Love me, that I may die the gentler way ;
Hate me, because thy love's too great for me ;
Or let these two, themselves, not me, decay ;
So shall I live thy stage, not triumph be.
Lest thou thy love and hate, and me undo,
O let me live, yet love and hate me too.

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Blomsterdekorasjoner ved Torbjørn Åkesson, Storgatens blomsterhandel / Kunstnerisk tilrettelegggelse ved Anne Schinrud, Schinrud Productions / Design: Rayon