



## PRESS RELEASE

### The Schock Prizes reward the creation of theories, art and music

Rolf Schock saw beauty in logic and philosophy, as well as mathematics, art and music. This year, his prizes are being awarded to two Swedish logicians, a Russian mathematician, a Belgian artist and architect and a Hungarian composer. The prize is worth 400,000 kronor per category, a total of 1.6 million Swedish krona.

The Rolf Schock Prizes have an unusually large breadth. The foundation that was created after the death of Rolf Schock decides who will receive the prizes, in partnership with no fewer than three Swedish academies, the Royal Swedish Academy of Sciences, the Royal Academy of Fine Arts and the Royal Swedish Academy of Music.

“The Schock Prizes recognise people who have made outstanding contributions in these four areas, in which Rolf Schock was particularly interested. It is a great honour for the participating academies to celebrate these creative individuals at the prize ceremony on 19 October, and other events in association with this,” says Göran K. Hansson, secretary general of the Academy of Sciences and chair of the Schock Foundation.

#### The Musical Arts

The 2020 Rolf Schock Prize in the Musical Arts is awarded to **György Kurtág**, composer, teacher and pianist

*“György Kurtág is one of our foremost living composers today. Beyond his outstanding life’s work as a composer, he has made a name for himself as an interpreter, not least of his own piano works, and as an engaged and important teacher for generations of musicians. Kurtág’s own artistry is coloured by creativity, warmth and an amazing ability to concentrate, paired with a great technical mastery.”*

The Hungarian composer, teacher and pianist György Kurtág was born in 1926 in Lugoj. During the Revolution in 1956 Kurtág fled to Paris, where he came to study for Olivier Messiaen and Darius Milhaud, among others. He published his first piece, a string quartet, in 1959. Kurtág became professor in chamber music at the Franz Liszt Academy of Music in Budapest in 1967. His breakthrough as a composer came in 1981 when Pierre Boulez

premiered his work Die Botschaften des verstorbenen Fräulein Troussowa. Other works include Játékok, Kafka Fragmente for soprano and violin, Requiem po drugu for soprano and piano, Double Concerto for piano, cello and two chamber ensembles, as well as Lebenslauf for two bassett horns and two pianos.

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## Logic and philosophy

The 2020 Rolf Schock Prize in logic and philosophy is awarded to **Dag Prawitz**, Stockholm University,

*“for proof-theoretical normalization in natural deduction”*

and

**Per Martin-Löf**, Stockholm University,

*“for the creation of constructive type theory.”*

Logic is the study of what makes some arguments or inferences valid and others not. Dag Prawitz and Per Martin-Löf, from Stockholm University, are emeritus professors in theoretical philosophy and logic, respectively, specialising in proof theory and constructivist philosophy of mathematics. They are both members of the Royal Swedish Academy of Sciences and have been nominated by scholars all over the world.

Dag Prawitz’ doctoral thesis, from 1965, in which he presented reduction to normal form in natural deduction, quickly became a classic that is still viable today. A proof in normal form has a clear structure, which makes it possible to determine important properties of proofs. Natural deduction is a system of simple rules for how to arrive at a particular conclusion from given premises, and now plays a central role in modern verificationist philosophy of language.

Initially, Per Martin-Löf also worked in proof theory, cooperating closely with Prawitz. In the 1970s, he created a constructive version of type theory, a formal language in which it is possible to express constructive mathematics. Here, a proof of a mathematical statement can be regarded as a program for verifying the statement. Constructive type theory also functions as a powerful programming language and has had an enormous impact in logic, computer science and, recently, mathematics.

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## Mathematics

The 2020 Rolf Schock Prize in mathematics is awarded to **Nikolai G. Makarov**, California Institute of Technology

*“for his significant contributions to complex analysis and its applications to mathematical physics”*

Nikolai Makarov received his doctorate from the LOMI Mathematics Institute in Leningrad in 1986, and is now professor of mathematics at Caltech, USA. The areas he has worked on include complex analysis, which investigates functions of complex variables. This field is vital to many branches of mathematics and has numerous applications in the natural sciences and engineering.

His most famous results concern harmonic measure in two dimensions, stating that the hitting probability distribution on the boundary for Brownian motion in two-dimensional, simply connected domains (domains without holes) is one-dimensional. Brownian motion is the random movement of small particles floating in a fluid or gas, which was studied by Albert Einstein in the early 20<sup>th</sup> century.

Nikolai Makarov has also made revolutionary contributions in the field of growth phenomena that describe crystal growth in a two-dimensional space. In recent years, he has also produced innovative results in conformal field theory in quantum mechanics, particularly its relationship to complex analysis and probability theory.

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## The Visual Arts

The 2020 Rolf Schock Prize in visual arts is awarded to **Francis Alÿs**, architect and artist

*“for a body of work that is as profound as it is extensive. Francis Alÿs’s congenial, metaphorising idiom affords deepened insights into chaotic conflicts while at the same time drawing attention to shortcomings in our daily representation of events. With seriousness and acuity, Francis Alÿs addresses real, tragic situations and circumstances which in his poetic renditions become universal and find their way into our hearts. His extensive projects, such as moving mountains and building bridges between continents, always denote the individual human step or measure. In this way Francis Alÿs makes a space for us as participants rather than viewers when we are confronted by his works.”*

Francis Alÿs was born in 1959 in Antwerp, Belgium, and lives in Mexico City. He studied architecture at the Institut Saint-Luc in Tournai and technology at the Istituto di Architettura in Venice before settling in Mexico in 1986. As architect and artist he works in a broadened

field, with expressions that span painting, sculpture, drawing, photography, film and performance. Francis Alÿs's artistic oeuvre is characterised by an exploration of boundaries, escape routes, power and vulnerability, in which the works address issues of a socio-political and anthropological nature, and of geopolitics.

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## About the prize

Rolf Schock, who left a great fortune on his death in 1986, stated in his will that the Royal Swedish Academy of Sciences should propose laureates in logics and philosophy, as well as in mathematics, that the Royal Academy of Fine Arts should propose laureates in one of the visual arts and that the Royal Swedish Academy of Music should appoint laureates in one of the musical arts. His bequest is managed by the Schock Foundation, which formally decides the laureates. This year's prize ceremony will be on 19 October 2020 in the auditorium of the Royal Academy of Fine Arts, Fredsgatan 12, in Stockholm.

Read more about Rolf Schock.