

CWI

Centrum Wiskunde & Informatica

## Presentation Van Wijngaarden Awards 2011



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Soiree, Oude Lutherse Kerk, Amsterdam, 10 February 2011



## Centrum Wiskunde & Informatica 1946–2011

### Van Wijngaarden Award

The purpose of the Van Wijngaarden Award is to honor researchers who have made important contributions to mathematics and computer science. In 2006, the 60th anniversary of the institute inspired the General Director and the Board of the Centrum Wiskunde & Informatica to introduce this award. It was named after Prof. dr. ir. Adriaan van Wijngaarden (1916–1987), one of the founding fathers of computer science in the Netherlands and former director of the Mathematisch Centrum – now CWI. The award consists of a bronze sculpture and is presented every five years.

Founded in 1946, Centrum Wiskunde & Informatica (CWI) is the national research institute for mathematics and computer science in the Netherlands. It is located at the Science Park Amsterdam and is part of the Netherlands Organisation for Scientific Research (NWO). The institute is internationally focused and renowned. Over 160 researchers conduct pioneering research and share their acquired knowledge with society. Over 30 researchers are also employed as full professors at universities. The institute has generated 21 spin-off companies.

CWI is one of the founding members of the European Research Consortium for Informatics and Mathematics (ERCIM) and it manages the Benelux Office of the World Wide Web Consortium (W3C).

CWI has 210 fte staff, including 162 researchers (34 full professors, 44 postdocs, 58 PhD students, 35% international, 16% female); the annual budget amount to 18 M€. CWI is proud of its ten Veni, eight Vidi, three Vici winners, its Spinoza Prize Winner and ERC Starting Investigator.

The first Van Wijngaarden Awards were presented to computer scientist Nancy Lynch (Massachusetts Institute of Technology) and mathematician Persi Diaconis (Stanford University) during the celebration of CWI's 60th anniversary in February 2006.

## About

**Éva Tardos** is Schurman Professor of Computer Science at Cornell University, currently on leave at Microsoft. Her PhD is from Eotvos University, Budapest. She has been elected to the National Academy of Engineering and the American Academy of Arts and Sciences. Her research interest is algorithms and algorithmic game theory, the theory of designing systems and algorithms for selfish users.

**John C. Butcher** has been a Professor at the University of Auckland from 1966 until he retired as an Emeritus Professor in 1998. He is a Fellow of the Royal Society of New Zealand, the New Zealand Mathematical Society and the Society for Industrial and Applied Mathematics. He works on numerical methods for ordinary differential equations.

**Jan Karel Lenstra** is General Director of Centrum Wiskunde & Informatica and Professor of Combinatorial Optimization at Eindhoven University of Technology.

**Leen Stougie** is Professor of Operations Research at VU University Amsterdam.

**Arjen Doelman** is Professor of Applied Analysis at Leiden University, and director of the Lorentz Center.

**Peter J.M. van Laarhoven** is chairman of the governing board of CWI and director Strategy and Airport Development of Schiphol Group.

**Tilman Andris** is philosopher and already twenty years a professional conjurer.

The **Van Wijngaarden Award** is a bronze sculpture, made by Hanneke van den Bergh.

## Programme

20.00	Opening	Jan Karel Lenstra
20.10	Laudatio	Leen Stougie
20.15	The Price of Anarchy	Éva Tardos
20.45	Intermezzo	Tilman Andris
21.05	Laudatio	Arjen Doelman
21.10	Numerical Analysis in Pictures	John Butcher
21.40	Presentation of the Van Wijngaarden Awards	Peter van Laarhoven
21.50	Reception	

## Abstracts

### Laudatio Éva Tardos

*Leen Stougie*

Éva Tardos is Jacob Gould Schurman Professor in Computer Science at Cornell University. She chaired the computer science department during the last four years. She is currently on sabbatical at MIT. Before she started at Cornell in 1989, she worked for two years at MIT, after having been a postdoc in the Computational Complexity Program in 1985/1986 at the Mathematical Sciences Research Institute in Berkeley.

Éva comes from the famous Hungarian school in discrete mathematics. She obtained her PhD in 1984 at Eötvös University in Budapest. With this solid background, she became one of the most influential researchers in theoretical computer science. Already at an early age, Éva won the Fulkerson Prize in 1988, for her polynomial-time algorithm for the min cost flow problem. For her complete work in algorithms and complexity, she was awarded the George Dantzig Prize in 2006. She received various fellowships and has been editor of the most prestigious journals in theoretical computer science.

Her most recent achievements are in algorithmic game theory. She was one of the first who saw its importance and enormous potential. She co-edited the first book in the area in 2007. The price of anarchy, a topic of algorithmic game theory, is the subject of Éva's Van Wijngaarden lecture.

### The Price of Anarchy

*Éva Tardos*

Traditional algorithm design considers problems described by a single objective function. In many applications multiple agents each pursue their own selfish interests. We will attempt to quantify the degradation of quality of solution caused by the selfish behavior of users, compared to a centrally designed optimum. We will consider this issue in the context of some network games modeling various applications.

## **Laudatio John Butcher**

*Arjen Doelman*

John C. Butcher is Honorary Research Professor at the Department of Mathematics of the University of Auckland. His primary area of research is numerical analysis. He can be considered as one of the founding fathers of the theory of the numerical integration of ordinary differential equations. Professor Butcher exhibits a remarkable broad view of mathematics in his research. He for instance introduced disciplines as graph theory and combinatorics into numerical analysis in his seminal studies on the accuracy of numerical methods for solving ordinary differential equations.

Both his training and his professional academic career took place completely in New Zealand – except for a short two-year period at Stanford in the early 1960's. He was an undergraduate student in mathematics at the University of Auckland in the period 1951–1956 and completed his PhD in physics at the University of Sydney in 1961. He has been Professor of Mathematics at University of Auckland since 1966. Apart from his permanent connections to New Zealand, John Butcher has held many, many visiting positions all over the planet, including CWI when it was still called Mathematisch Centrum, and Leiden University, where he was Kloosterman hoogleraar in 1991.

Officially his position at the University of Auckland changed into a position of Professor Emeritus in 1999. Now, at the age of 77 and twelve years after his retirement, he is still fully active in research. His interests have evolved into the field of symplectic methods and, as professor Butcher himself says, ‘the period since my retirement has been one of the most productive in my research career’.

## **Numerical Analysis in Pictures**

*John Butcher*

Contributions to mathematics are usually expressed using a combination of words and formulae, but sometimes pictures can add to comprehension and appreciation. In this talk, the use of pictures will be emphasized, at the expense of formal mathematics, to gain easy access to some otherwise difficult ideas.

