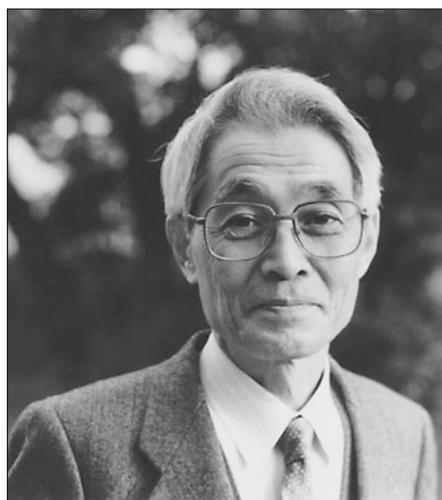


Akaike Receives 2006 Kyoto Prize



Hirotugu Akaike

HIROTUGU AKAIKE, professor emeritus at the Institute of Statistical Mathematics. The prize consists of a diploma, a Kyoto Prize Medal of 20-karat gold, and a cash gift of 50 million yen (approximately US\$446,000).

The Work of Hirotugu Akaike

Rapid advances in science and technology in the twentieth century brought numerous benefits to society, but at the same time exposed many new problems. Furthermore, in the twenty-first century, rapid globalization and “informatization” have resulted in the development of strong global links that have transformed the world into a huge network of mutually dependent systems. Consequently, it is no longer possible, in many cases, to solve problems within the framework of a single isolated system; it is instead necessary to grasp, analyze, and forecast problems in the context of this

global network of closely linked systems. Modern statistical sciences are expected to help our understanding of the study of such complicated, uncertain, and dynamic systems, or the study of situations where only incomplete information is available. The main role of statistical sciences must be to give useful scientific methodologies for the development of new technologies and for the further development of society, which is characterized by increased uncertainty. One of the characteristics of the statistical sciences is their interdisciplinary nature, with applicability in various fields. For example, the role of the statistical sciences has recently become increasingly important in the understanding and forecasting of phenomena in economic-related fields, such as finance and insurance; safety-related fields, including pharmaceuticals, food, and transportation; natural phenomena, such as weather, natural disasters, and the environment; and in the management of huge systems.

Starting in the early 1970s Akaike explained the importance of modeling in analysis and in forecasting. He formulated the Akaike Information Criterion (AIC), which facilitates selection of the most appropriate model from a number of different types of models. Ever since, the AIC has been exerting a powerful influence on the development of the information and statistical sciences.

In order to understand and forecast phenomena from a vast quantity of data obtained in experiments or observations, it is necessary to construct a hypothetical statistical model. The selection of such a model is highly subjective, as it is made on

the basis of a researcher's own ideas, knowledge, and experience. Therefore, it is essential to estimate the most adequate model among the possible candidates. However, from a practical standpoint, this was very difficult because of the finite number of data and the lack of an objective criterion for selection. The AIC offers a solution to this problem, which seems to be common in almost every field of engineering and science. Consequently, the role and meaning of the AIC as a criterion for estimating statistical models have become extremely significant in the development of statistical science. The AIC is built into commercial statistical software packages and is also widely used in such diverse areas as gene analysis, image compression technologies, and vehicle stability control technologies, among many others.

Biographical Sketch

Hirotsugu Akaike was born on November 5, 1927, in Japan. He received a B.A. (1952) and a Ph.D. (1961) from the University of Tokyo. He started his career at the Institute of Statistical Mathematics, Japan, in 1961, serving as Director General of the Institute from 1986 to 1994, when he became a professor emeritus at the Institute. His honors include receiving the Okochi Memorial Technology Award (1980) in the field of industrial engineering and production technology, the Asahi Prize (1989), the Japanese Medal with Purple Ribbon (1989), and the Japan Statistical Society Award (1996).

About the Prize

The Inamori Foundation was established in 1984 by Kazuo Inamori, founder and chairman emeritus of Kyocera Corporation. The Kyoto Prize was founded in 1985 and is presented to individuals or groups in appreciation not only of their outstanding achievements, but also of the excellence of the personal characteristics on which they have built their contributions to humankind. The laureates are selected through a strict and impartial process considering candidates recommended from around the world. The other Kyoto Prize laureates for 2006 are immunologist and geneticist Leonard A. Herzenberg of Stanford University and Japanese designer Issey Miyake.

Other mathematical scientists who have received the Kyoto Prize are Simon Levin (2005), Mikhael Gromov (2002), Kiyosi Itô (1998), Donald Knuth (1996), André Weil (1994), Edward Lorenz (1991), I. M. Gelfand (1989), John McCarthy (1988), Rudolf Kalman (1985), and Claude Shannon (1985).

—From Inamori Foundation announcements