

# PROBABILITY AND STATISTICS THROUGHOUT THE CENTURIES

Outline of the evolution of probability and statistics throughout the centuries, starting with classical antiquity, passing to the Hellenistic period (323-146 B.C.), jumping to the aftermath of the Renaissance in Western Europe (*roughly between the 14<sup>th</sup> and the 16<sup>th</sup> centuries*), stopping at the 17<sup>th</sup> and the 18<sup>th</sup> centuries, and concluding with the 19<sup>th</sup> and the 20<sup>th</sup> centuries, as well as the contemporary period.

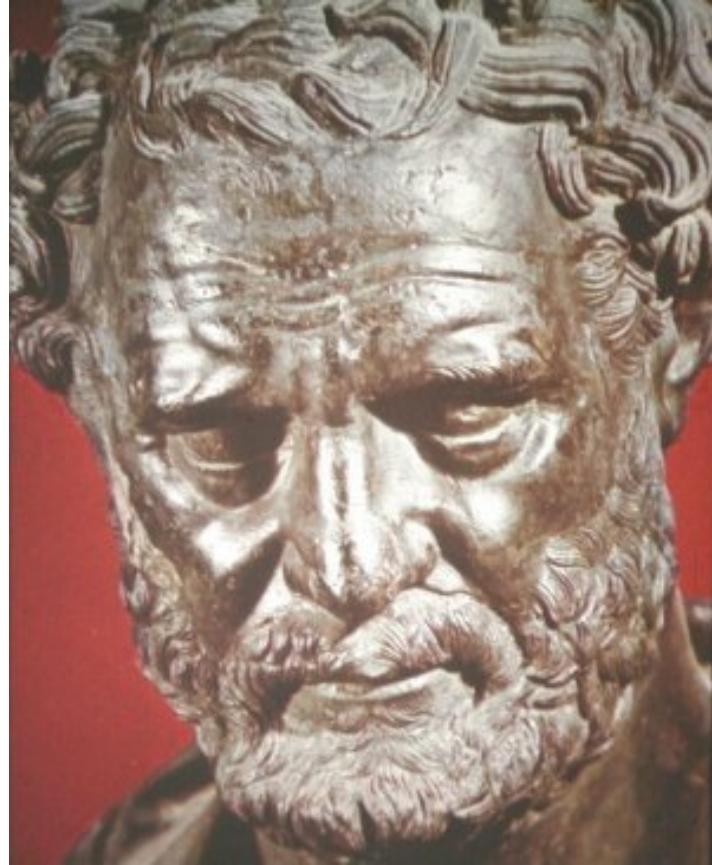
# **TOPICS TO BE DISCUSSED**

1. What is probability.
2. What is statistics.
3. Relation between probability and statistics.
4. Classical antiquity – Hellenistic period.
5. Probability in the 16th and the 17th centuries.
6. Probability in the 18th century.
7. Statistics in the 19th and the 20th centuries.
8. Probability in the 20th century.
9. Statistics and probability in our times – Their influence to sciences.
10. Closing remarks.

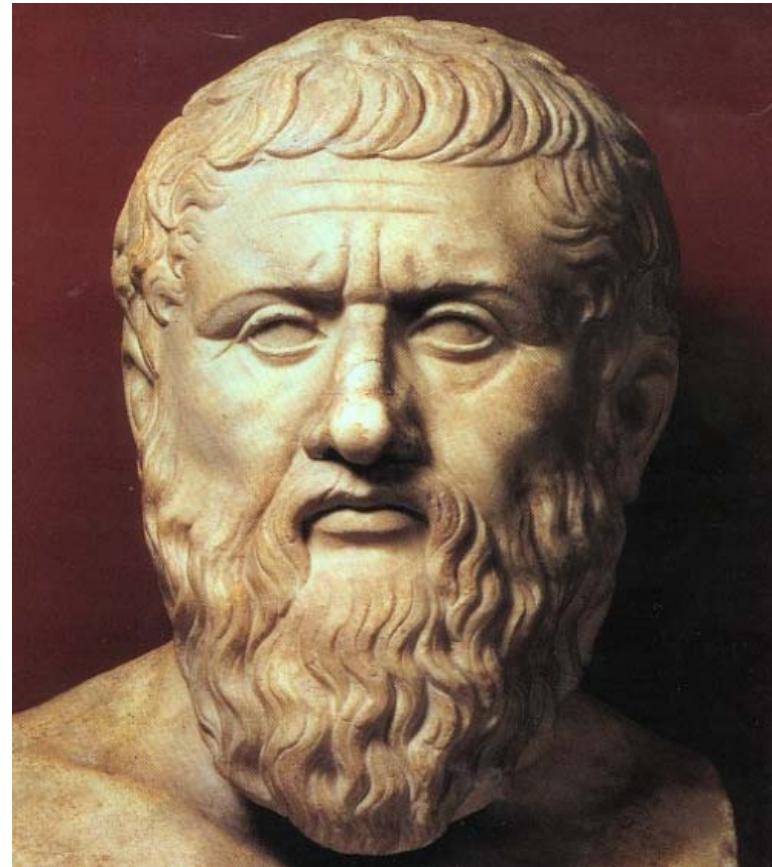
## REFERENCES

1. Aristotle's Metaphysics, translated by Richard Hope. Ann Arbor Paperbacks, The University of Michigan, 1952.
2. Aristotle's Poetics, translated by M. Heath. Humphry House, 1966.
3. On the Possible and the Probable in Ancient Greece, S. Sambursky. OSIRIS, Vol. 12, pages 35-48, 1956.
4. The Physical World of Late Antiquity, S. Sambursky. Routledge & K. Paul, London, 1962.
5. Stoics, Epicureans and Skeptics. An Introduction to Hellenic Philosophy, R.W. Sharples. Routledge, London & New York, 1966.
6. Science and Speculation. Studies in Hellenistic theory and practice, J Barnes, J. Brunschwig, M. Burnyeat, M. Schofield, eds. Cambridge University Press, 1982.
7. WALD: Selected Papers in Statistics and Probability, edited for the Institute of Mathematical Statistics, T.W. Anderson et al., eds. Stanford University Press, Stanford, California, 1957.
8. R.A. Fisher: The Life of a Scientist, Joan Fisher Box. John Wiley & Sons, New York, 1978.
9. NEYMAN-from life, Constance Reid. Springer-Verlag, New York, 1982.

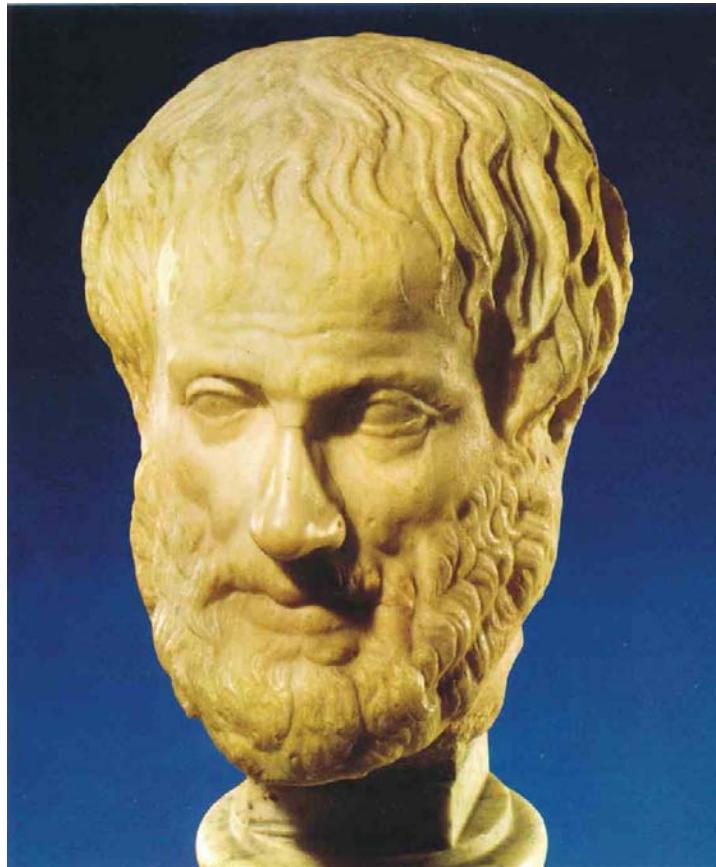
10. The History of Statistics: The Measurements of Uncertainty before 1900, S.M. Stigler. Harvard University Press, Cambridge, Massachusetts, 1986.
11. Statistics on the Table. The History of Statistical Concepts and Methods, S.M. Stigler. Harvard University Press, Cambridge, Massachusetts, 1999.
12. A History of Probability and Statistics and Their Applications Before 1750, Anders Hald. Wiley Series in Probability and Mathematical Statistics, 1990.
13. Handbook for the GREAT08 Challenge: An image analysis competition for cosmological lensing, S. Bridle et al. Annals of Applied Statistics, Vol. 3, No.1, pages 6-37.
14. Inference for the dark energy equation of state using type IA supernova data, Christopher R. Genovese et al. Annals of Applied Statistics, Vol. 3, No.1, pages 144-178, 2009.
15. In memory of Constantine S. Caratheodory, N. Artemiadis. Proceedings of the Academy of Athens, Vol. 75, issue B, 2000.
16. Encyclopedia Britannica on line.
17. Personal communication with applied mathematicians, computer scientists, and theoretical physicists.



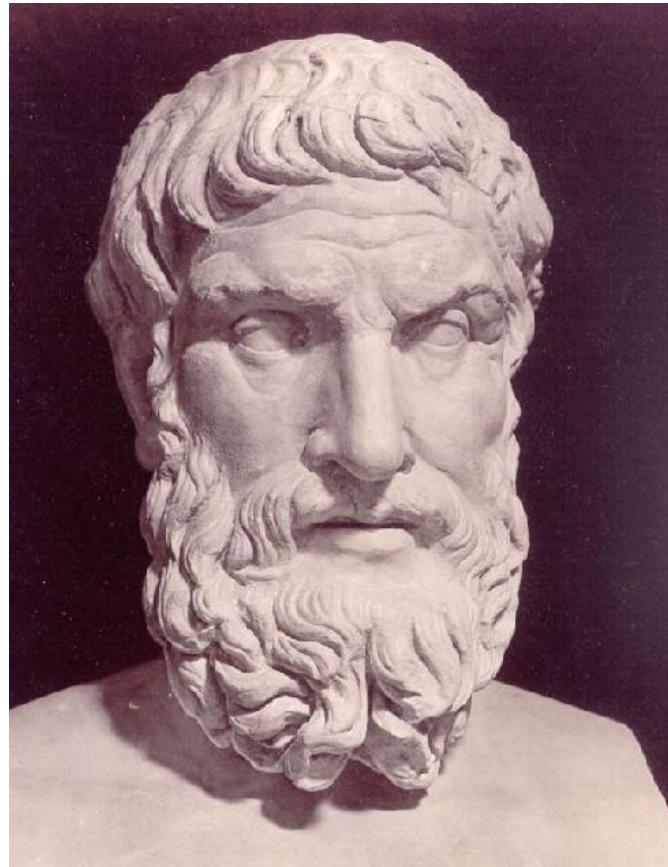
**Democritus (460-370 B.C.)**



**Plato (427-347 B.C.)**



**Aristotle (384-322 B.C.)**



**Epicurus (341-270 B.C.)**



**Blaise Pascal (1623-1662)**



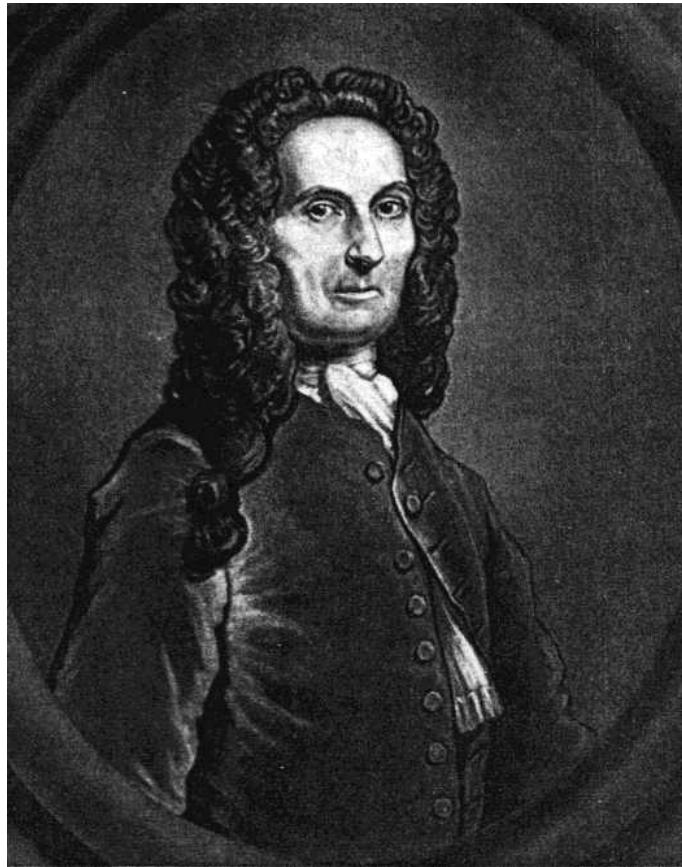
**Pierre de Fermat (1601-1665)**



**Christian Huygens (1629-1695)**



**Jacob Bernoulli (1654-1705)**



**Abraham de Moivre (1667-1754)**



**Pierre Simon Laplace (1749-1827)**



**Karl Friedrich Gauss (1777-1855)**



**Siméon Denis Poisson (1781-1840)**



**Thomas Bayes (1702-1761)**



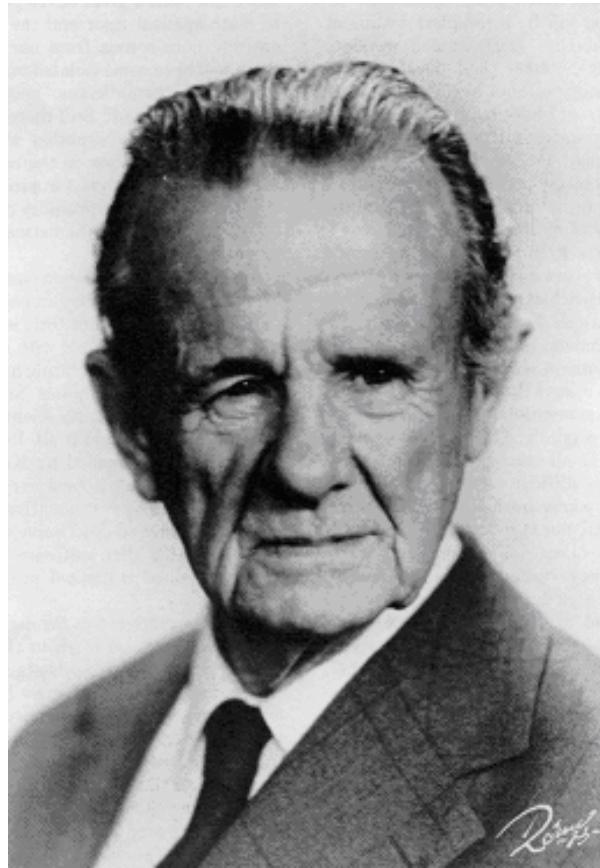
**Karl Pearson (1857-1936)**



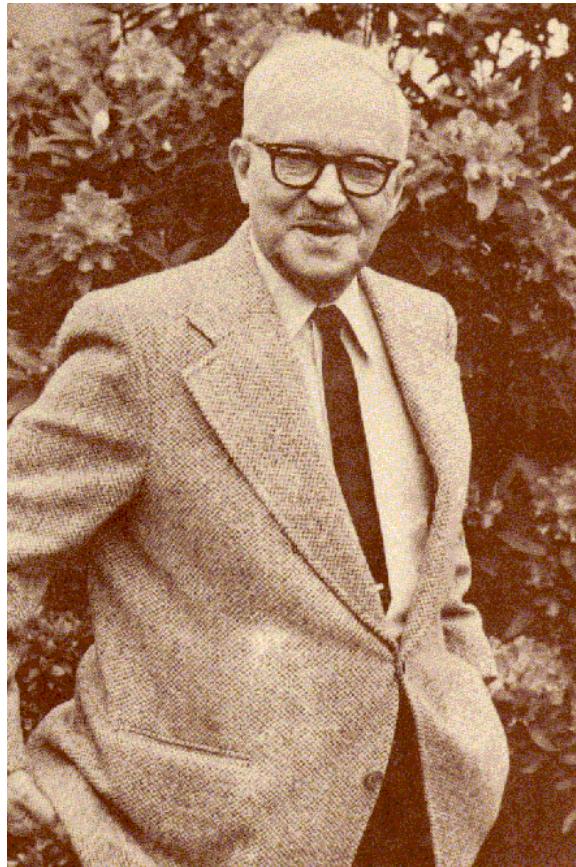
**Sir Ronald Fisher (1890-1962)**



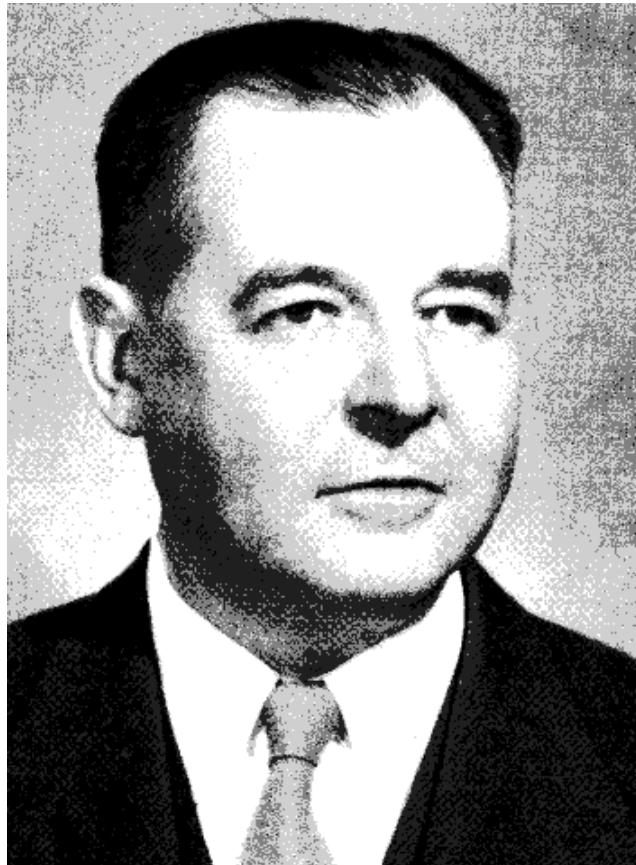
**P. C. Mahalanobis (1893-1972)**



**Harald Cramér (1893-1972)**



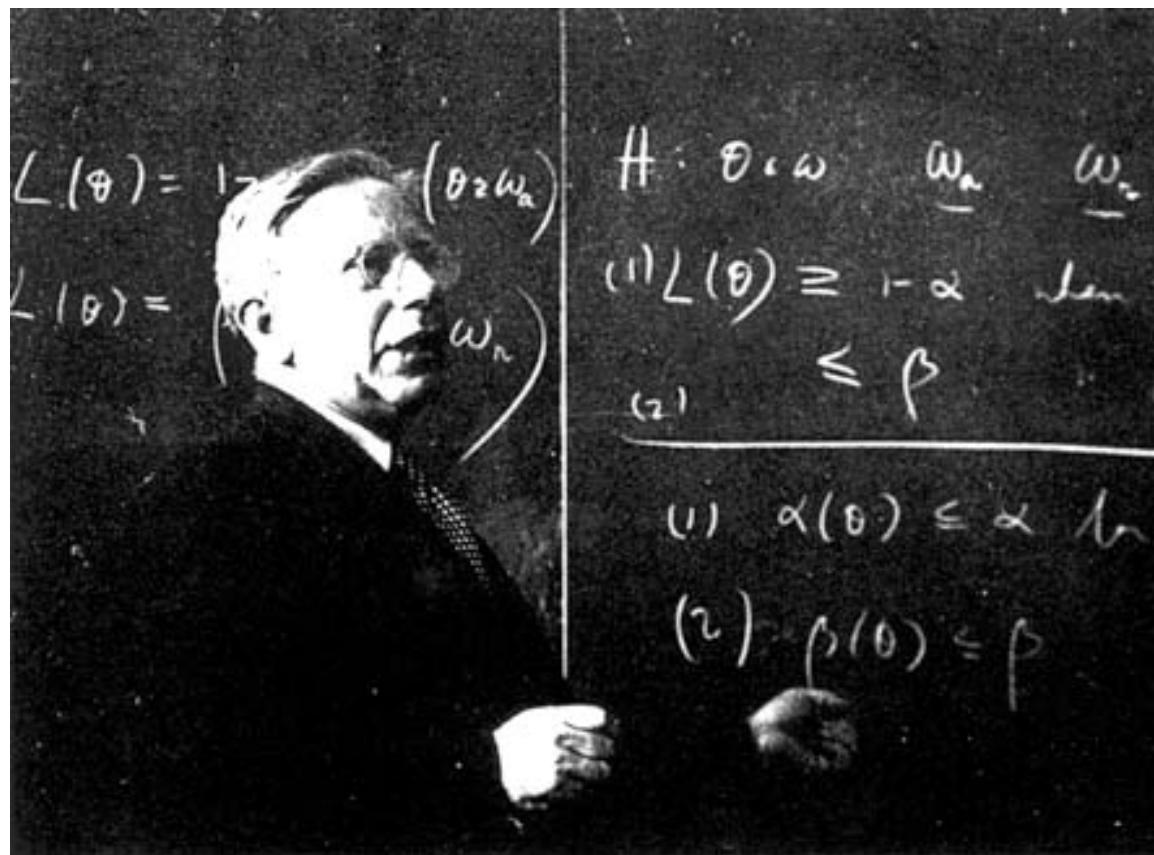
**Jerzy Neyman (1894-1981)**



**Harold Hotelling (1895-1973)**



**David Blackwell (1919-)**

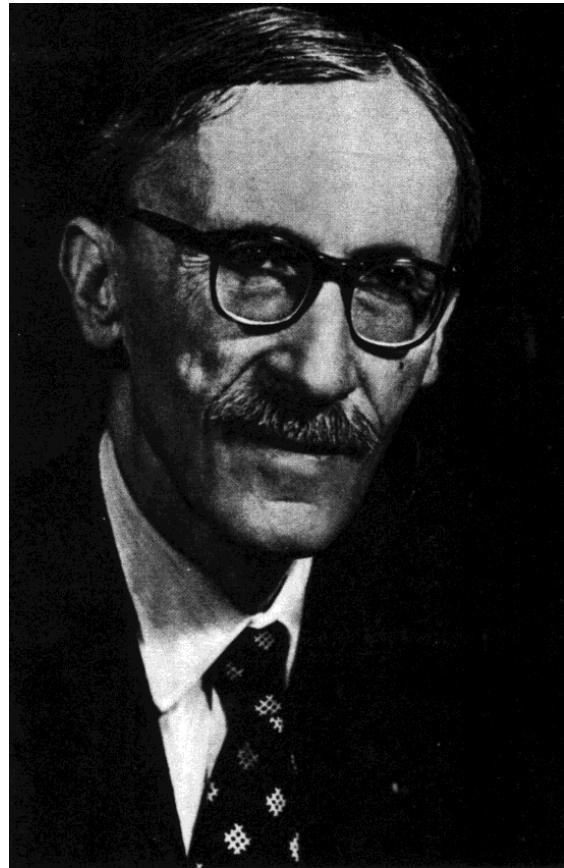




**Andrei N. Kolmogorov (1903-1987)**



**Andrei A. Markov (1856-1922)**



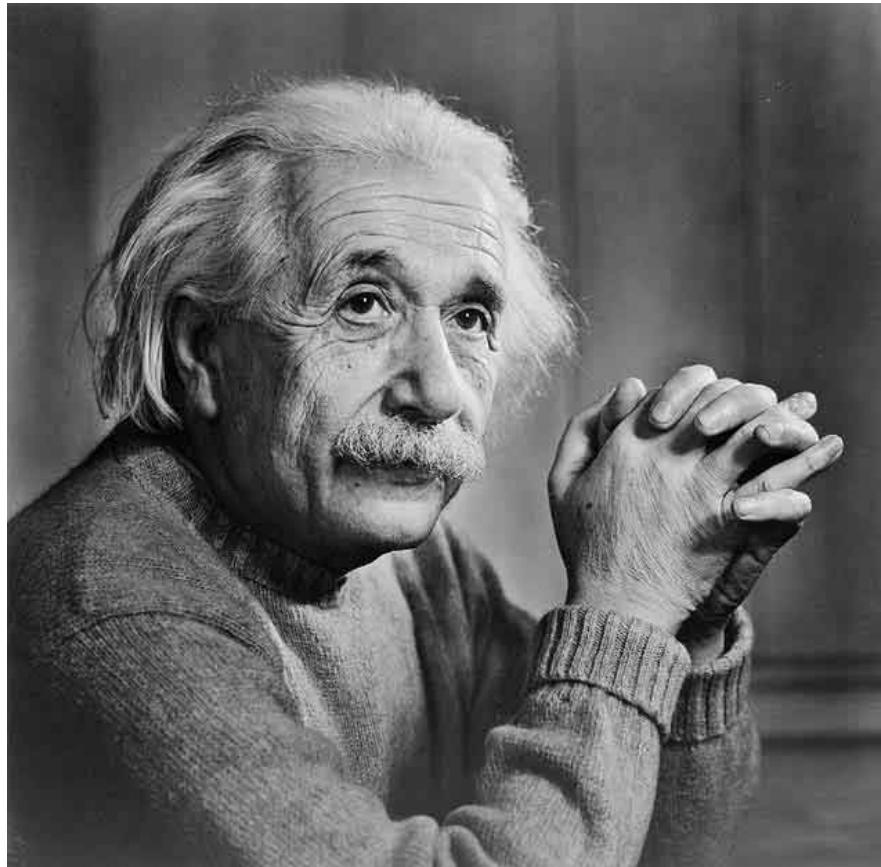
**Paul Lévy (1886-1971)**



**Henri Poincaré (1854-1912)**



**Constantine Carathéodory (1873-1950)**



**Albert Einstein (1879-1955)**



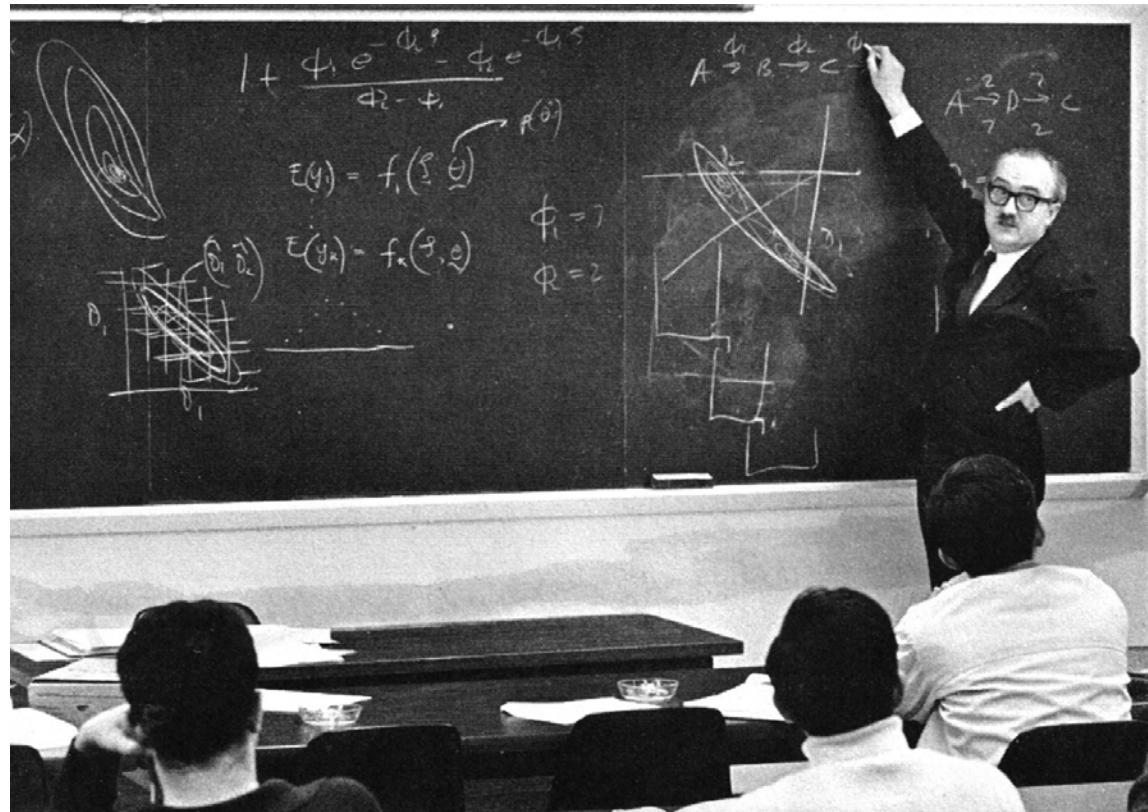
**George E. P. Box (1919-)**



**C. R. Rao (1920-)**



**Sir David Cox (1924-)**



**George E.P. Box (1919-)**



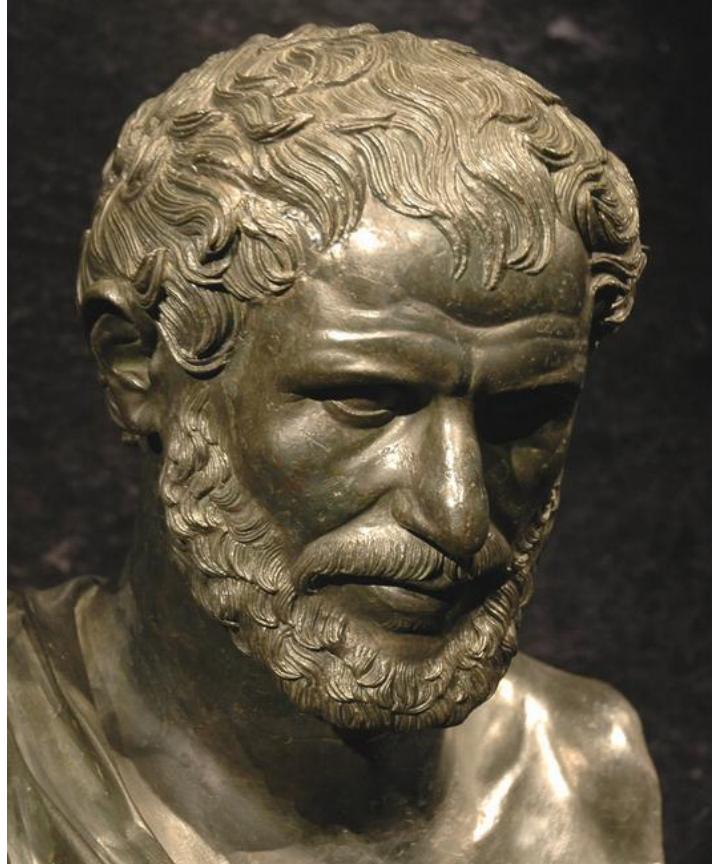
**Graduate students attending  
one of Professor Box's classes**



**Ilya Prigogine (1917-2003)**



**Tim Berners-Lee (1955-)**



**Heraclitus (535-475 B.C.)**