Origins of Probability Theory

M442 Lecture Notes

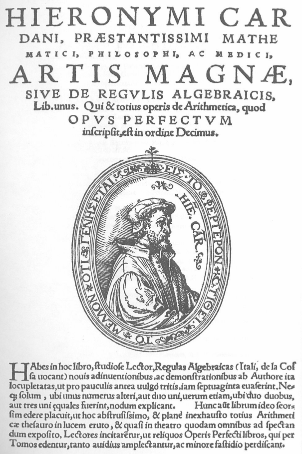
"The gambling passion lurks at the bottom of every heart."
Honorè de Balzac

Gerolamo Cardano

The first person to attempt a systematic theory of probability was the Italian mathematician, physician, astrologer, and gambler Gerolamo Cardano (1501–1576).

Gerolamo Cardano

Cardano is perhaps best known for his study of cubic and quartic algebraic equations, which he solved in his 1545 text Ars Magna (The Great Art)—solutions which required the controversial notion of keeping track of the unlikely expression $\sqrt{-1}$.



HIERONYMI CAR
DANI, PRÆSTANTISSIMI MATHE
MATICI, PHILOSOPHI, AC MEDICI,
ARTIS MAGNÆ,
SIVE DE REGVLIS ALGEBRAICIS,
Lib. unus. Qui & totius operis de Arithmetica, quod
OPVS PERFECTVM
inscripsit, est in ordine Decimus.

HAbes in hoc libro, studiose Lector, Regulas Algebraicas (Itali, de la Cossa uocant) nouis adinuentionibus, ac demonstrationibus ab Authore ita locupletatas, ut pro pauculis antea uulgò tritis, iam septuaginta euaserint. Neq; solum, ubi unus numerus alteri, aut duo uni, uerum etiam, ubi duo duobus, aut tres uni æquales fuerint, nodum explicant. Hunc aût librum ideo seorsim edere placuit, ut hoc abstrusissimo, & planè inexhausto totius Arithmeticæ thesauro in lucem eruto, & quasi in theatro quodam omnibus ad spectandum exposito, Lectores incitarētur, ut reliquos Operis Perfecti libros, qui per Tomos edentur, tanto auidius amplectantur, ac minore fastidio perdiscant.

Antoine Gombaud Chevalier de Mere

In 1654, Antoine Gombaud Chevalier de Mere (1607–1684), a French nobleman, writer and professional gambler, brought Blaise Pascal's attention to the following game of chance: is it worthwhile betting even money that double sixes will turn up at least once in 24 throws of a fair pair of dice?

Blaise Pascal and Pierre de Fermat

This led to a long correspondence between the French mathematicians Blaise Pascal (1623–1662) and Pierre de Fermat (1601–1665), during which the classical theory of probability was first formulated. (Pascal is on the left.)

Pierre Simon Laplace

The single most influential work on probability theory was written by another French mathematician Pierre Simon Laplace (1749–1827), "Thèorie Analytiques des Probabilitès," published in 1812.