Descartes and the Philosophy of Mathematics

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The Life and Times of Descartes

Descartes was born on 31 March 1596 at La Haye, near Tours; the French authorities have quite properly re-named the place La Haye Descartes. He was given the name René, which was commonly bestowed on children whose mothers died in or shortly after childbirth. His was a well-to-do middle-class family; his father was a member of the Touraine parliament. This was during the convulsions of the French civil war, for at the assassination of Henry III in 1588, the throne fell to a Protestant, Henry de Bourbon, King of Navarre, and the French Catholics refused to accept a heretic to direct the affairs of the eldest daughter of the Roman Church. The whole business was soon settled, however, when Henry of Navarre sensibly decided that Paris was well worth a Mass and converted to Catholicism; he went on to be the most popular king in French history. Descartes was sent away to school at the nearby Jesuit establishment at La Flèche; there he first studied mathematics from the textbooks of Peter Clavius, the most famous mathematician of his time.

Clavius had acquired a great reputation from his edition of Euclid, in which he pointed out some omissions in the list of postulates and axioms. He was the first to use the decimal point. His chief accomplishment, however, and the real reason that Clavius is remembered, was the reform of the Julian Calendar he undertook for Pope Gregory XIII; the calendar we use today, the “Gregorian” Calendar, is due to him. This got Clavius into a lot of trouble, for some significant mathematicians, François Viète for example, did not like Clavius’s calendar. Furthermore, in order to catch up with the sun, Clavius had ordered that 4 October 1582 was to be followed by 15 October 1582; the people of Frankfurt rioted against mathematicians and the Pope, who were in cahoots to rob them of ten days. Clavius was sorely dismayed by the controversy, though he got the better of his adversaries.

While Descartes was learning mathematics from the books of Clavius, he developed a certain life-style at school that he was not to change until 1650, when the change resulted in his death. He petitioned the Most Reverend Head Master of the school, Fr. Charlet, that he be allowed to remain in bed until 11 o’clock and be exempted from all the morning’s classes and activities. Surely this must strike a sympathetic chord in the hearts of all students who dislike early morning classes. Descartes’ excuse was that he was too sickly to get out of bed so early, and that it was more beneficial for him to remain there and think until 11 a.m. The Jesuits granted him the requested dispensation, and
for the rest of his life he stayed in bed thinking until 11 a.m., and it was during those hours that he produced all his mathematical and philosophical works. If one wants to accomplish anything in life, one has to make time for it, an inviolable block of time, and Descartes was of the opinion that his thinking was more important than attending the performances of his mediocre instructors. One makes time for what one really wants.

Descartes did not go on to attend a university. In those days it was not necessary to get a degree in order to function as a mathematician or anything else; if you wanted to be a doctor, you just put a sign on your door "I am a doctor" and that was sufficient. The mathematician Euler's first job was as a Professor of Medicine at St. Petersburg in Russia. The Master's Degree was a license to teach, but Descartes had no intention of teaching, and I cannot think of many great mathematicians of his time who did. Teaching at a university then was entirely different from what it is today. It is even more amusing than instructive to point out some of the differences. In many cases, the professor was only paid by the students who attended his lectures; the greater his following, the greater his income. Since there were no grades, the students flocked to the better rather than the easier instructors; there was no need to weed out the poor teachers. They mostly starved, since everyone went to the cow that gave milk. In some places, like the University of Basel, certain positions were filled not by search committees but by God; the names of all qualified applicants (those who had submitted a decent learned paper along with their application) were put into a bag, and a name was drawn out at random to fill the vacancy. This was why Euler had to leave Basel and go to Russia; the vacancy in the Physics Department for which he had applied was assigned to someone else by the laws of probability. Once you got a position, there was often no such thing as tenure to protect you. In France, for example, no matter what your seniority, you could be challenged for your post by any newcomer, and if he defeated you in a public competition, you were out. The great Roberval, who found the area under one arch of the cycloid, held the record in France for the longest tenure under these trying circumstances; at the Royal Collège de France he defeated all comers for about 40 years. In any case, Descartes determined not to become a teacher, and instead joined the army of the Dutch Prince of Orange.

As a result of this military career, Descartes was able to write the first book on dueling, which was his only work not to be put on the List of Prohibited Books after his death. When the Thirty Years War broke out in 1618, he transferred his allegiance to the Catholic army of the Duke of Bavaria. The war broke out because people were itching for a fight; the immediate cause was an insult offered by some Protestant Bohe-

mians to the Catholic Holy Roman Emperor. They threw his emissaries out of a window. The emissaries were not physically harmed since they landed in a pile of manure, but this so-called "Defenestration of Prague" was a sufficient casus belli. Descartes eventually left the Bavarian army and joined the forces of Cardinal Richelieu, Prime Minister of France, which were reducing the Huguenot fortress of La Rochelle. After this, he retired from military life. It is not known how many people he personally killed.

Descartes spent some time travelling about on religious pilgrimages; in particular, he went to inspect the Holy House of Loreto, and visited Rome to win the Jubilee indulgence of the Holy Year of 1625. He was a

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pious Catholic, and it was his major concern later in life to provide a rational basis for his religious belief. When he returned to Paris, he took the advice of his mentor, Cardinal Bérulle, and decided to devote the rest of his life to learning. Since he was determined to begin by doubting everything, he thought it advisable to leave France, whose people love controversy and where it was dangerous to doubt, and go to some country where almost everything was tolerated. Just as today, so also in the seventeenth century, that country was Holland. The people there were too busy making money to care about his skepticism. Descartes removed thither in 1629 and stayed for twenty years. He was painted there by Hals, and the portraits are the most famous of any mathematician ever made. One can see from the Copenhagen and Louvre pictures that he dressed perpetually in dreary black, and that if the Dutch barbers prospered, it was not due to his business. One is reminded of Raphael's Plato. Descartes moved his household at least once a year in order not to be bothered by the inconveniencing courtesies of society. Only one man knew where to find him at all times, his friend Fr. Mersenne. He gave his address to no one else. He infuriated his visitors by refusing to get out of bed if they arrived before 11 a.m.

This all changed in 1649. In that year, Descartes received a message from Queen Christina of the Goths and Vandals (i.e., Sweden), who was fascinated by his books, to come and visit her in Stockholm. This was asking quite a lot, since Sweden was out of the world, though not so much as it is today. Queen Christina was in trouble because, having read in Descartes that she should doubt everything, she began to doubt whether the Swedish Lutheran state religion was right, and it was illegal for her to do so. Eventually she had to abdicate and go into exile in Rome. At any rate, she wanted Descartes to come to Stockholm, teach her