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HNRS 190

30 October 2012

Origins of Computing

The lineage of today's computing has a rich history founded in logic, reasoning, the arguments of men against men, and even a few unusual deaths. Computing has several firsts, and the men to back it up. For example, Charles Babbage formulated the idea of a programmable computer. While some work had already been done in the area, Babbage laid the groundwork for future computer designs utilizing mechanical components. If Babbage is said to be the father of the first programmable computer, his counterpart Ada Lovelace can be considered the first true programmer. She worked extensively on Babbage's "Mechanical Engine" computer, and is the mother of the institution of computer programming.

Another first in the computing industry was the first commercially viable computer, known simply as ENIAC. The Electronic Numerical Integrator and Computer was a general purpose machine. While machines had been designed previously that could complete a very specific task, Babbage and ENIAC's fathers John Mauchly and J. Presper Eckert were able to develop machines that could be reprogrammed and used for various tasks. The machine was able to run continuously for eight years, a testament to its University of Pennsylvania designers. Other discoveries have marked the turf of IEEE milestones, such as Attenesof's discovery of binary numbers, a hardware-level

way of storing information that machines across the world still use today. However, Mauchly and Eckert stole the designs of Attenesof, leaving him with little credit for the discovery.

Not surprisingly, the origins of computing have strong ties to the world of mathematics and its mathematicians. David Hilbert, credited with formulating the concepts of proof theory and mathematical logic, laid out the path for the next century of mathematical work. His collection of twenty problems, or challenges known as the Hilbert Problems, to the mathematics community astounded mathematicians and to this day, a few of his questions still lay unanswered or fully solved. They analyzed concepts requiring complete and consistent propositional logic, as well as complete and consistent predicate calculus, and shaped our modern outlook on computing.

Following his predecessor, Kurt Gödel developed several crucial concepts such as the incompleteness theorem, stating that for an axiomatic system with specific constraints, and robust enough to perform arithmetic manipulations on natural numbers, certain axioms cannot be proven. Essentially, Gödel began challenging the mathematical developments of Hilbert, who desired to formalize math. If Gödel delivered the payload, Alan Turing took up the rear and bayoneted the wounded in the IEEE battle of computing developments. Turing's development of the Turing machine laid the groundwork for more advanced developments in computing. His Turing Machine provided the layout for the general purpose computer, which would later become mass-produced for consumer use. Turing's machine proved extremely useful due to its versatility in computing algebraic operations. Indeed, the history of characters and inventions in computing's origins is wrought with challenges and achievements alike.