

THE WORD ROBOT

"Robot: An automatic device that performs functions normally ascribed to humans or a machine in the form of a human."

Webster's Dictionary

The acclaimed Czech playwright, Karel Capek, made famous the word 'robot', the Czech word for forced labor or serf. Capek introduced the word in his play *R.U.R.* (Rossum's Universal Robots) first performed in Prague in January 1921. Capek's play presents a paradise where robot machines initially provide many benefits for humans, but in the end bring an equal amount of blight in the form of unemployment and social unrest.

The word 'robotics' comes from *Runaround*, a short story published in 1942 by Isaac Asimov. One of the first robots Asimov wrote about was a robo-therapist. A Massachusetts Institute of Technology Professor, Joseph Weizenbaum, wrote the Eliza program in 1966, a modern counterpart to Asimov's fictional character. Weizenbaum initially programmed Eliza with 240 lines of code to simulate a psychotherapist. The program answered questions with questions.

Asimov created the four laws of robot behavior, cyber laws all robots had to obey and a fundamental part of positronic robotic engineering. The Isaac Asimov FAQ (Frequently Asked Question) states, "Asimov claimed that the laws were originated by John W. Campbell in a conversation they had on December 23, 1940. Campbell in turn maintained that he picked them out of Asimov's stories and discussions, and that his role was merely to state them explicitly. The first story to explicitly state the Three Laws was *Runaround*, which appeared in the March 1942 issue of *Astounding Science Fiction*. Unlike the Three Laws, however, the Zeroth Law is not a fundamental part of positronic robotic engineering, is not part of all positronic robots, and, in fact, requires a very sophisticated robot to even accept it."



FIGURE 8

Law One: A robot may not injure a human being, or, through inaction, allow a human being to come to harm, unless this would violate a higher order law. Will the surgeon robot Pathfinder remember it?

Law Zeroth: A robot may not injure humanity, or, through inaction, allow humanity to come to harm.

Law One: A robot may not injure a human being, or, through inaction, allow a human being to come to harm, unless this would violate a higher order law.

Law Two: A robot must obey orders given to it by human beings, except where such orders would conflict with a higher order law.

Law Three: A robot must protect its own existence as long as such protection does not conflict with a higher order law.

An early example of robot technology, Grey Walter's *Machina Speculatrix* of the 1940's was recently restored to its working glory after being lost for some years. Walter's *Machinae* were small robots that looked like turtles. The restored cyber turtles are freewheeling and light-seeking creatures, propelled by two small electric motors. They roam in any direction with sensor-contacts to avoid obstacles. A photoelectric cell mounted on the steering column helps the turtles search and aim towards the light.

In 1956, a historic meeting occurred between scientists George Devol and Joseph Engelberger. The two met over cocktails to discuss the writings of Isaac Asimov. The result of this meeting was that Devol and Engelberger agreed to work on creating a robot together. Their first robot (the *Unimate*) served at a General Motors plant working with heated die-casting machines. Engelberger started a manufacturing company called *Unimation*, which stood for Universal Automation, the first commercial company to produce robots. Devol wrote the necessary patents for *Unimation*. *Unimation* is still in production today, with robots for sale.

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16 Understanding the content

Read the passage 'The Word Robot' and say if the following statements are true (T) or false (F), then correct the false ones.

- | | | | |
|---|--|----------------------------|----------------------------|
| a | According to the Webster's Dictionary a robot is a machine in the form of a human. | <input type="checkbox"/> T | <input type="checkbox"/> F |
| b | 'Robot' is a Czech word which means serf. | <input type="checkbox"/> T | <input type="checkbox"/> F |
| c | 'Runaround' is a short story published by Karel Capek. | <input type="checkbox"/> T | <input type="checkbox"/> F |
| d | Eliza is the modern counterpart of Karel Capek's robo-therapist. | <input type="checkbox"/> T | <input type="checkbox"/> F |
| e | Asimov created the four laws of robot behaviour. | <input type="checkbox"/> T | <input type="checkbox"/> F |
| f | Zeroth Law is a fundamental part of positronic robotic engineering. | <input type="checkbox"/> T | <input type="checkbox"/> F |
| g | <i>Machina Speculatrix</i> was an early example of robot technology. | <input type="checkbox"/> T | <input type="checkbox"/> F |
| h | Devol and Engelberger created the <i>Unimate</i> . | <input type="checkbox"/> T | <input type="checkbox"/> F |
| i | <i>Unimation</i> is a company which produces robots. | <input type="checkbox"/> T | <input type="checkbox"/> F |