The New Profession

Isaac Asimov

Back in 1940, I wrote a story in which the leading character was named Susan Calvin. (Good heavens, that’s nearly half a century ago.) She was a “robopsychologist” by profession and knew everything there was to know about what made robots tick. It was a science fiction story, of course. I wrote other stories about Susan Calvin over the next few years, and as I described matters, she was born in 1982, went to Columbia, majored in robotics, and graduated in 2003. She went on to do graduate work and by 2010 was working at a firm called U.S. Robots and Mechanical Men, Inc. I didn’t really take any of this seriously at the time I wrote it. What I was writing was “just science fiction.”

Oddly enough, however, it’s working out. Robots are in use on the assembly lines and are increasing in importance each year. The automobile companies are installing them in their factories by the tens of thousands. Increasingly, they will appear elsewhere as well, while ever more complex and intelligent robots will be appearing on the drawing boards. Naturally, these robots are going to wipe out many jobs, but they are going to create jobs, too. The robots will have to be designed, in the first place. They will have to be constructed and installed. Then, since nothing is perfect, they will occasionally go wrong and have to be repaired. To keep the necessity for repair to a minimum, they will have to be intelligently maintained. They may even have to be modified to do their work differently on occasion.

To do all this, we will need a group of people whom we can call, in general, robot technicians. There are some estimates that by the time my fictional Susan Calvin gets out of college, there will be over 2 million robot technicians in the United States alone, and perhaps 6 million in the world generally. Susan won’t be alone. To these technicians, suppose we add all the other people that will be employed by those rapidly growing industries that are directly or indirectly related to robotics. It may well turn out that the robots will create more jobs than they will wipe out—but, of course, the two sets of jobs will be different, which means there will be a difficult transition period in which those whose jobs have vanished are retrained so that they can fill new jobs that have appeared.

This may not be possible in every case, and there will have to be innovative social initiatives to take care of those who, because of age or temperament, cannot fit in to the rapidly changing economic scene.

In the past, advances in technology have always necessitated the upgrading of education. Agricultural laborers didn’t have to be literate, but factory workers did, so once the Industrial Revolution came to pass, industrialized nations had to establish public schools for the mass education of their populations. There must now be a further advance in education to go along with the new high-tech economy. Education in science and technology will have to be taken more seriously and made lifelong, for advances will occur too rapidly for people to be able to rely solely on what they learned as youngsters.

Wait! I have mentioned robot technicians, but that is a general term. Susan Calvin was not a robot technician; she was, specifically, a robopsychologist. She dealt with robotic “intelligence,” with robots’ ways of “thinking.” I have not yet heard anyone use that term in real life, but I think the time will come when it will be used, just as “robotics” was used after I had invented that term. After all, robot theoreticians are trying to develop robots that can see, that can understand verbal instructions, that can speak in reply. As robots are expected to do more and more tasks, more and more efficiently, and in a more and more versatile way, they will naturally seem more “intelligent.” In fact, even now, there are scientists at MIT and elsewhere who are working very seriously on the question of “artificial intelligence.”

Still, even if we design and construct robots that can do their jobs in such a way as to seem intelligent, it is scarcely likely that they will be intelligent in the same way that human beings are. For one thing, their “brains” will be constructed of materials different from the ones in our brains. For another, their brains will be made up of different components hooked together and organized in different ways, and will approach problems (very likely) in a totally different manner.

Robotic intelligence may be so different from human intelligence that it will take a new discipline-”robopsychology”—to deal with it. That is where Susan Calvin will come in. It is she and others like her who will deal with robots, where ordinary psychologists could not begin to do so. And this might turn out to be the most important aspect of robotics, for if we study in detail two entirely different kinds of intelligence, we may learn to understand intelligence in a much more general and fundamental way than is now possible. Specifically, we will learn more about human intelligence than may be possible to learn from human intelligence alone.