# Substituted Sammy

## An Exercise in Defining Life

Substituted Sammy was a normal healthy boy. There was nothing in his life to indicate that he was any different from anyone else. When he completed high school he obtained a job in a factory operating a press. On this job he had an accident and lost his right hand. It was replaced with an artificial hand that looked and operated like a real one.

Soon afterward, Sammy developed a rare intestinal disease and a large portion of his lower small intestine had to be removed. It was replaced with an elastic silicon tube. Everything looked good for Sammy until he was involved in a serious car accident. Both of his legs and his good arm were crushed, and had to be amputated. Sammy also lost an ear in the accident. Prosthetic legs enabled Sammy to walk agilely and, an artificial arm replaced his real arm. Sammy had plastic surgery in which doctors used silicon plastic to rebuild the ear that had been lost in the crash.

Over the next several years Sammy was plagued with internal disorders. First, he had to have an operation to remove his aorta and replace it with a synthetic vessel. Next, his kidneys malfunctioned and the only way he could survive was to use a kidney dialysis machine. A kidney donor was sought, but no ones kidneys were compatible with Sammy's. Later, his digestive system became cancerous and had to be removed. He received his nourishment intravenously. Finally, his heart failed. Luckily for Sammy a donor heart was available, and it was successfully transplanted into him.

It was now obvious that Sammy had become a medial phenomenon. He had artificial limbs. Nourishment was supplied to him through his veins: therefore he had no solid wastes. All waste material was removed by the kidney dialysis machine, which also supplied oxygen and removed carbon dioxide from his blood as it circulated the blood throughout his body.

The doctors consulted bioengineers about Sammy. Since almost all of his life-sustaining functions were being carried on by machines they thought it might be possible to compress all of them into one mobile unit which could be controlled by electrical impulses from the brain. This unit would be equipped with mechanical arms to enable him to perform manipulative tasks. A mechanism to create a flow of air over his vocal cords might enable him to speak. In addition to all of this, they would have to amputate at the neck and attach his head to the machine, which would then supply all nutrients to his brain. Sammy consented, and the operation was successfully performed.

Sammy functioned well for a few years however, slow deterioration of his brain cells was observed and he was diagnosed as terminal. So the medical team that had developed around Sammy began to program his brain. A miniature computer was developed: it could be housed in a machine that was human-like in appearance, movement, and mannerism. As the computer was installed Sammy's brain cells completely deteriorated. Sammy was once again able to leave the hospital with the complete assurance that he would never return with any biological illnesses.

Name _____ Period _____ Date _____

## Summary Questions: Please answer the following using complete sentences.

1. By the end of this story does Sammy still have the necessary characteristics to be considered a living organism? Explain your answer.

2. Citing examples from the story list, describe all of the characteristics of life that Sammy lost. (You should have at least 5, see pg. 16 of your text for characteristics.)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

3. If you were Sammy would you have allowed the doctors and scientists to perform all of the procedures to save your life? Do you think this is a true story?

4. Do you think creating 'hybridized' robots with brain cells is a good idea? If not, explain why? If so, how might this be useful?

5. **Bonus (2pts):** Draw a picture of Sammy when he left the hospital for the last time. (You may use a separate sheet of paper.)