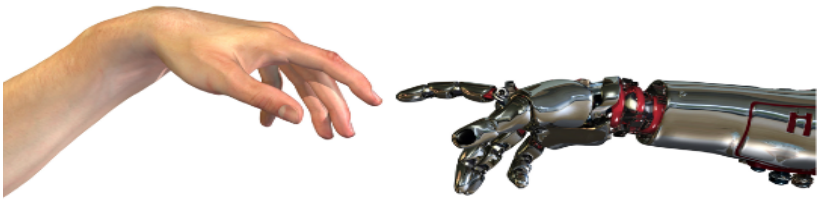

(Graphic from TVN flyer)

INTER-GENERATIONAL STUDY DAY

Robotics is the Future?

Thames Valley U3A Network (TVN) Study Day ***(Report by Ann Walter)***

This was a shared learning project organised jointly by TVN and Oxford Brookes University. The intention was that 150 students and 150 U3A members would attend the talks and discuss their reactions together. Unfortunately although 100 students signed up for the day only about 20 came and the ones I spoke to were in their first term and weren't actually studying Robotics.

The intention of the day was to show what has already been done, consider the strengths and weaknesses of robots and their interactions with people and try to imagine the impact they will have in the future.There were a few robots from the university's robotics department on display in the refreshment area, and researchers were happy to demonstrate them.

In the first session in the lecture theatre we saw a number of films which contained robots. The earliest robots, about 100 years ago, were larger than a man, made of metal and had great strength. We saw film clips from several decades, finishing with the humanoid robots which are very lifelike, and cyborgs which are humans who are part machine.

There are 3 main areas of robot development:

- Autonomy
- Intelligence
- Physical complexity

An **autonomous robot** performs its tasks with a high level of self government. This is necessary for example for robots on space vehicles. Robots with intelligence are developed with games playing and strategy in mind. The applications where robots are used can be complex and involve it in many decisions and many physical movements.
Autonomous robots are used where automatic operation is needed. Examples are in manufacturing, on space vehicles, in hazardous situations, where no humans are present. A robot goes through a sequence of steps when placed in a situation:

- it senses the environment (using whatever sensors it has)
- it recognises the situation (if it's too hot there may be a fire, if it detects chemicals in the air a person may be dying)
- it makes a decision (if the temperature is too high it must activate an alarm, if there are chemicals it must evacuate the area)
- it acts according to that decision (eg sets off alarm)

Isaac Asimov gave 3 Laws of Robotics in his 'I, Robot' series of books.

- A robot may not injure a human being or, through inaction, allow a human being to come to harm.
- A robot must obey orders given it by human beings except where such orders would conflict with the First Law.
- A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

These are the rules that robots are expected to follow so that they don't hurt humans. However the largest sponsor of robot development is the military and their robots are specifically employed to kill people and be willing to be destroyed.

Part of the day was taken up with videos of some of the research about robots and the elderly which is going on in USA, Japan, China, and Britain
Some of the applications certainly made you think and wonder what the world will be like in say 20 years time.
A) Paro seal (Japan)
Paro is a therapeutic robot baby harp seal, intended to be very cute and to have a calming effect on and elicit emotional responses in patients of hospitals and nursing homes, similar to animal-assisted therapy except using robots.(Wikipedia)
It can react, seek out eye contact, respond to touch and remember faces, among many other things.

B) Babysitter robot for the elderly relatives.
A robot may be a physical presence if the rest of the family have gone out but it needs to be able to understand and interpret what an older person wants or needs.

C) End of life robot (USA)
If nobody from the family can be at the bedside when someone is dying the end of life robot can comfort the dying person. It speaks to the person and strokes their skin.

The other example of human robot interaction was in a video and to my mind it produced an unexpected response from some of the audience.
The robot is Atlas (from Boston Dynamics) and it is humanoid, ie has the structure of a person's body. looks like a person
It was shown walking through woods over rough ground to a building. There it demonstrated picking up and replacing a large box. A, man came along with a long stick and each time the robot picked up the box the man knocked it away.
Then the man pushed the robot over from behind. It bent its arms and legs, lifted its upper torso, stood up and walked out of the door.
What surprised me was that when the robot was pushed over a soft "Aaaarh" came from the audience, presumably in sympathy with the robot which had been 'bullied' by the man.
I wonder if the response would have been the same if the robot had been built in a cube shape?

It was certainly a thought provoking day.

Ann Walter