LUCY

PRODUCTION: USA/France 2014

DIRECTOR: Luc Besson

STARRING: Scarlett Johansson (Lucy), Morgan Freeman (prof. Samuel Norman), Amr Waked (Pierre Del Rio)

SYNOPSIS

A cell splits up into multiple other cells and soon after a proto-human in prehistoric times is drinking from a lake. In the present, Lucy is a young woman with a drug called CPH4 stuffed into her intestine. A criminal kicks her stomach and this causes a tear in the drug bag, leaking the powder into Lucy's system.

Professor Norman is giving a lecture. He explains what could happen if humans could exceed the 10% brain capacity that they use. If they could reach up to 40%, they could manipulate matter.

Lucy reawakens. She is able to dig a bullet out from her shoulder without feeling pain. A doctor pulls the bag of drugs out of her stomach and she contacts professor Norman. She has now reached up to 20% brain capacity and is able to manipulate electronics, appearing on Norman's TV, as well as on his phone and the radio.

"40%" flashes onscreen. Lucy discovers a tooth in her glass, and then she spits up three more teeth. Then her skin starts to disintegrate. She wakes up in a hospital room, with her brain function now at 60%.

Lucy and Del Rio, a policeman, find Norman and she begins to divulge all she has come to realize with her brain power. Lucy gives the rest of the CPH4 to the professor to synthesize it into a liquid material that goes into her bloodstream. Her brain function goes to 70% and her hands start to turn into a black wormy substance that attaches itself to the computers in the room. As her brain function continues to increase, she manipulates matter and erases everything in the room, before creating some kind of new age super computer. She travels backwards, to prehistoric times to come face-to-face with the proto-human from the opening scene. They touch fingers, sending Lucy through the cosmos, giving her unlimited power.

She reaches 100% and her body disappears. The black matter morphs into a flash drive that lands in Norman's hands.

BEFORE VIEWING

1 Answer the questions.

1. Lucy is the protagonist of the story, but it is also the name given to an Australopithecus, the oldest hominid ever discovered. Read the synopsis to discover the relationship between the two.
2. Read the synopsis and create a table about the powers associated with the different percentages of Lucy's brain capacity.

FILM CLIP

2 ▶️ **Watch these short clips and answer the questions.**

1. What type of connection is Lucy making? Wires, cables, wireless?
2. What is she looking for according to professor Norman?
3. What does professor Norman presume she is creating?
4. How can you describe the computer?
5. What happens to the computer?
6. What do you think the pen drive given to professor Norman contains?

AFTER VIEWING

3 ▶️ **An artificial neural network (ANN) is a computational model based on the structure and functions of biological neural networks. Read the text and write down the advantages over traditional networks.**

Comparison between conventional computers and neural networks

One of the major advantages of the neural network is its ability to do many things at once, while in traditional computers processing is sequential, i.e. one task at once. The idea of threading makes it appear to the human user that many things are happening at one time. However, processes are not actually happening simultaneously. An artificial neural network is an inherently multiprocessor-friendly architecture. Without much modification, it goes beyond one or even two processors of the von Neumann architecture to be parallel. With a massively parallel architecture, the neural network can accomplish a lot in less time with processors specifically designed.

Another fundamental difference of the two networks is the way in which they function. While computers function logically with a set of rules and calculations, artificial neural networks can function via images, pictures, and concepts. Based upon the way they function, traditional computers have to learn by rules, while artificial neural networks learn by example, by doing something and then learning from it.

The "connections" or concepts learned by each type of architecture is different as well. The von Neumann computers are programmed by higher level languages then translated into the machine's assembly language. Because of their style of learning, artificial neural networks can "program themselves". While the conventional computers must learn only by doing different sequences or steps in an algorithm, neural networks are continuously adaptable by truly altering their own programming. Conventional computers are limited by their parts, while neural networks can work to become more than the sum of their parts.

The speed of each computer is dependent upon different aspects of the processor. Von Neumann machines require either big processors or the tedious, error-prone idea of parallel processors, while neural networks require the use of multiple chips built for the application.

https://cs.stanford.edu/people/eroberts/courses/soco/projects/neuralnetworks/Comparison/comparison.html