

We've seen bionic robot-men in films for many years but is fiction now becoming a reality?

The very latest prosthetics

In the James Bond movie *Skyfall*, there is a frightening moment when the bad guy of the film removes his prosthetic mouth to show his damaged face. We are scared, but amazed at the possibility. Could it be possible to replace parts of our body and even improve on the original? The UK's Channel 4 has shown a documentary called 'How to Build a Bionic Man', featuring psychologist Bertolt Meyer who himself has a bionic hand. 'Rex', the Bionic Man, brings together scientists working on the latest research to test the limits of prosthetic technology.

Built by leading UK roboticists Richard Walker and Matthew Godden from Shadow Robot, Rex is currently on display at London's Science Museum. The two-metre tall artificial man has 28 of the latest artificial limbs and organs and cost almost \$1 million to make. He has a 3D-printed skull, a synthetic blood system and artificial pancreas, kidney, spleen and trachea.

Showing technology to the world

Walker describes how their work began about two years ago when the production company contacted him. His team proposed to obtain the very latest prosthetics and build a human from it. As Walker says, 'see if it stands up and walks!' Their objective was to show people the latest artificial body parts, all of which can be used in the real world. Rex was born after two and a half months of late nights and lots of pizza.

Then there are the more conventional prosthetics like the artificial hand, which uses signals from nerves in the human body for picking up and holding things. Walker explains, 'to get the hand to pick something up, we had to simulate the human nerve signals that it would look for in the human body.'

Replacing failed organs

Walker is very surprised by how well technology is being used to build organs to function effectively when the original organ fails. So the artificial pancreas provides insulin and when insulin levels fall, insulin is released. When the insulin level rises again, the mechanical pancreas can absorb it, just like the real pancreas.

If the Bionic Man can be built again in five years' time, Walker predicts that we will be even more surprised by what prosthetic technology can do for our bodies.

If you're interested in science check out the British Council's science magazine called *Cubed* at <http://www.britishcouncil.org/cubed>.