In this article we look behind-the-scenes at the visual effects work for the current season of Doctor Who. We focus on the work of visual effects designer Mike Kelt, who was responsible for the first four parts of 'The Trial of a Timelord'.
Scrapped
To bring the shot within budget Kelt’s first act was to scrap half of the scripted scene. The graveyard of space-ships was eliminated, but after this he tried to remain faithful to the script — even though this would involve the camera turning nearly 360 degrees around the station to follow the descending Tardis.
With the requirements of the shot agreed with the director, Kelt went on to supervise the building of the space-station itself. Designed as a detailed miniature, this began life as a piece of styrene-foam carved to form one-sixth of a circle. From this six fibreglass sections were cast then stuck together to form a complete circle. This basic shape was worked up to create surface details and the station’s central spire. Details such as aerials and gun emplacements came from shop-bought toy kits. The miniature was illuminated by some two hundred small light bulbs.
One aspect of the space station’s design Kelt paid particular attention to was its colour. He felt that while many films like Alien had excellently designed space-ships they tended to be left in uninteresting colours such as grey or white. In contrast Kelt aimed for the look achieved by SF artist Chris Foss who is renowned for his colourful air-brushed space hardware. So, once the miniature had been primed in grey, Kelt picked out its shape with colour adding a wealth of graphic detail.
Once completed the miniature was shot on 35mm film at Pierce studios who were responsible for the stop motion work masquerading as computer graphics in The Hitch Hiker’s Guide to the Galaxy and the opening and closing credit sequences for Terrahawks. Kelt has nothing but praise for the people at the studios who often worked till eleven in the evening to complete the shot within the tight deadline of one week.
Although the space station is seen throughout the series’ fourteen parts to establish the trial’s location, on screen the opening shot lasted a mere forty seconds. Pierce studios judge this to be one of the most complicated camera motions that has ever been shot on an individual model in Britain — if not the world. It was certainly the most ambitious and expensive model shots ever attempted by the BBC.
The two robots proved equally challenging. Kelt decided to make the servicer robot fully functional and self-powered. It also had to be fairly robust as the script called for it to be used in the studio and on location where it would be required to carry a number of the cast. Kelt's finished design was seven feet high and mounted on a pair of caterpillar tracks. These were powered by two invalid motors. A member of the visual effects team sat inside the machine to control it. The end product was so manoeuvrable it could turn completely round in its own length.

While the caterpillar tracks certainly made the servicer practical, Kelt's main reason for using them was purely aesthetic. He was tired of seeing Dalek-like robots that moved about on hidden wheels or castors. This struck him as a 'cop out' because the viewer could never see why or how they were supposed to move. All too often the answer was by somebody sitting inside and running their feet along the floor!

The servicer was one of two types of robot that guarded a sinister underground computer which was manipulating some of the last survivors of mankind. The second was the so-called "immortal", Draithro. To design Draithro Kelt again turned to the script. This described it simply as a large android-type robot. More important than its description, it indicated the type and range of movements it had to perform in the episodes. In the film industry a different costume would be built for each movement the android had to make but for a TV production like Doctor Who one suit is all that can be afforded.

Kelt began by standing in front of a mirror and mimicking the movements Draithro would have to make. The final design literally grew from there, beginning with a rough prototype built around an Action Man, through to a highly accurate 30-inch, third-scale model, to the final eight-foot costume sculpted by Stan Halfway and cast in fibreglass.

The completed costume was basically a massive suit of armour. Every joint was an actual joint allowing the suit to stand without the support of a performer inside. Draithro's upper arm stopped almost at the performer's shoulder-joint allowing its own massive shoulders to swing backwards with a cam-like action. The performer could look out of the costume through a grill on the android's chest. Originally the actor providing the voice of Draithro was to have been inside the costume but at the last minute he was replaced by member of the visual effects team.

If you notice something vaguely familiar about Draithro's design that's because it is a direct descendant of Hitchhiker's Marvyn, the paranoid android, which was another of Kelt's designs. Kelt believes Draithro to be a considerable improvement in terms of hiding the shape of the performer and freedom of movement.

With part five of 'The Trial of a Timelord' the visual effects chores were taken up by Peter Wragg. But Kelt's involvement with TV SF is far from over. He is currently story-boarding special effects sequences for the BBC's new series Star Cop.