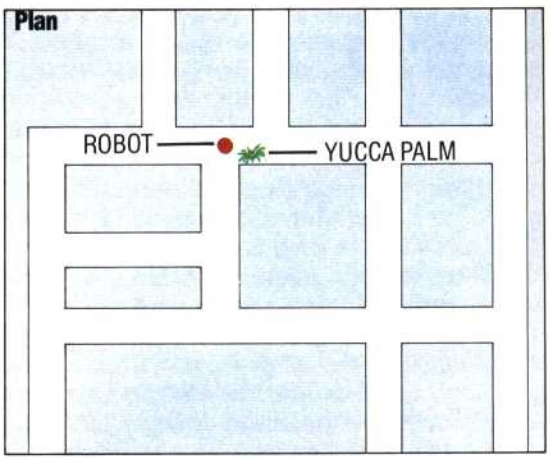
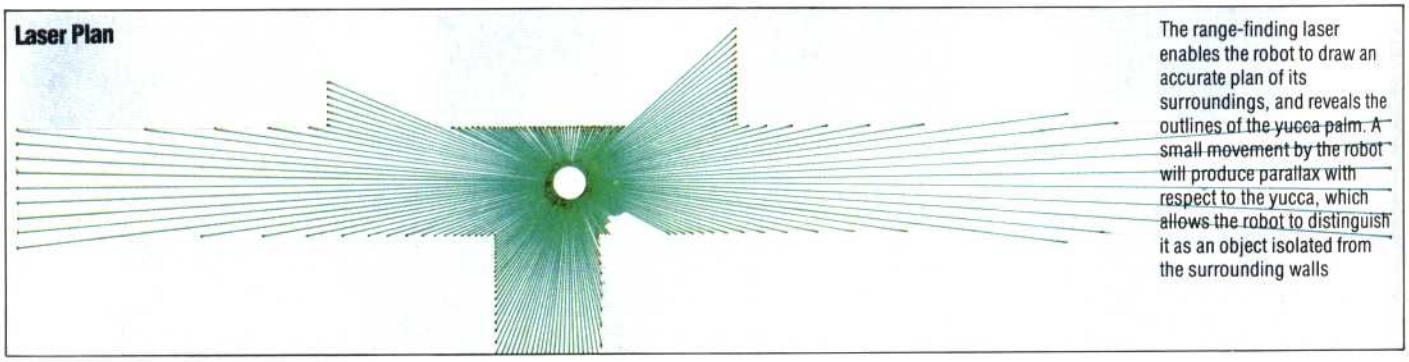
Sense From The Sensors

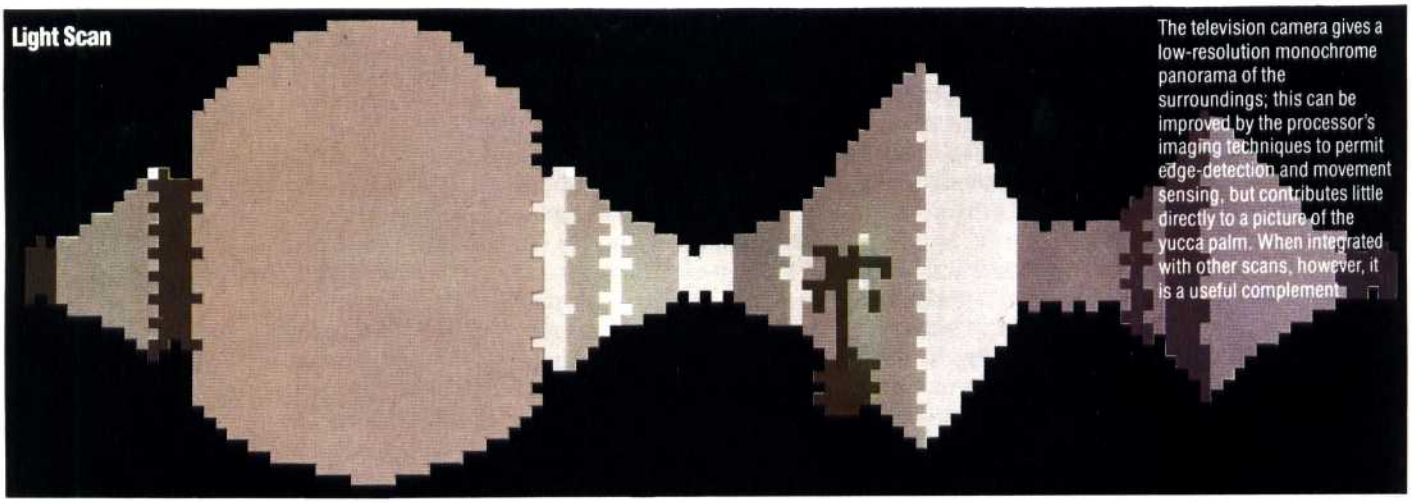
Making sense of the outside world is the robot's greatest problem, the more so as the range and complexity of its sensing equipment increases. No single sensor will give a completely informative picture, and some may seem to contradict one another. The extent to which the robot can integrate and compare the input from its various sensors is the measure of its external 'consciousness'.

The plan shows that, in this example, the robot is in a corridor whose walls are painted flat white; there is only one light source, so the illumination of a wall depends upon its orientation. Near the robot is a yucca palm





The range-finding laser enables the robot to draw an accurate plan of its surroundings, and reveals the outlines of the yucca palm. A small movement by the robot will produce parallax with respect to the yucca, which allows the robot to distinguish it as an object isolated from the surrounding walls



The television camera gives a low-resolution monochrome panorama of the surroundings; this can be improved by the processor's imaging techniques to permit edge-detection and movement sensing, but contributes little directly to a picture of the yucca palm. When integrated with other scans, however, it is a useful complement

The infrared picture is as confusing as the television scan, but it does reveal that the yucca's temperature signature is different from that of its immediate surroundings and is consistent with a living organism. At the same time it reveals on a wall the heat 'shadow' left by a human's leaning against it long enough to raise the local temperature. Comparison of this picture with the television picture and the laser plan enables the robot to identify and discount the heat shadow, and to recognise the yucca as living

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