

Looking Back In Time: Powerful Telescopes Tell Us More About The Universe

University of Cambridge



In the early 1950s, scientists were busy looking at galaxies 1,000 million light years away and debating whether the Big Bang or Steady State theories described the nature of the Universe.

Like many scientists, Martin Ryle, an astronomer at the University of Cambridge, knew that the development of more powerful telescopes would hold the key to solving the puzzle. Looking at the light that has travelled to Earth from far away objects is like looking back in time, right to the beginning of the Universe.

“ In general, the bigger the telescope, the more powerful it is. So to see further into space — and hence further back in time — astronomers usually build bigger devices. But Ryle chose a different approach.

He created hugely powerful telescopes by carefully constructing and arranging a number of smaller ones that worked together.

By 1958, thanks to the development of a powerful computer built at Cambridge by Maurice Wilkes, Ryle could analyse data from many telescopes working within 5km of each other, just as if he had covered the whole area by a single vast device.

Ryle's methods are now used all over the world. They even take advantage of the rotation of the earth to look at different parts of the sky. The approach, now known as the 'aperture synthesis technique,' has created devices that are so powerful they can see a postage stamp on the moon. Observations made with these instruments have been crucial to the study of the stars and the study of the development of the Universe.

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