



Mathematical models: from sundials to number engines

Babbage's engine of precision

Narrator:

Like Napier and others before him, Babbage has turned hard computation into a series of additions.

Doron Swade, The Science Museum

One of the very difficult things to do, with mechanical devices is to get them to perform direct multiplication and division. The advantage of eliminating multiplication and divisions in the mechanism was something that Babbage perceived and that is the basic principal of his engines.

Narrator:

When 'x' is zero, the polynomial has a value of 41. As it operates, the engine uses the method of differences to compute successive values.

This polynomial needs a greater number of simple additions to give the result for each value of 'x'.

Why might Babbage have designed his engine to give values, which were much too accurate for everyday use?

Doron Swade

And one of the speculations is that he was a mathematician. He was a perfectionist. And this was not only for practical use, in terms of measurements he would perform but in terms of pure science where the precision if you like was limitless.