## Bitesize

## GCSE Bitesize Computer Science

## Steve Furber on CPU cores

I'm Steve Furber. I was involved in the design of the very earliest ARM processors at Acorn in the early 1980s.

The standard computer is a device which has a central processing unit which executes single instructions, very simple instructions, very quickly. By passing so many of these instructions through in such a short time, it creates the illusion of doing complicated things. So up to the 1990s, most computing was based very strongly on the simple sequential model, and in the 1990s computers got more powerful by making clocks go faster and there was effectively a clock race between the major manufacturers. But then, in the early 2000s, it became clear that, mainly for heat reasons, they couldn't keep making sequential machines go faster. They just got too hot. And so they all stopped trying to advance that way and instead went to putting multiple slower cores on a chip. And then you have the parallel model.

What we see now is just that parallel model continuing to scale up to increasing levels of parallelism. That applies to the desktop and to the smartphone. There are almost no single-thread sequential machines left. Even smartphones have dual or quad processors and multi-core graphics processors.

