

Doomsday alert: engineers are here to stay

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New technology has been replacing manual labour for millennia but even AI's not going to be sidelining engineers, says **Professor Brian J Ford...**



Engineers are in turmoil. They are being warned that their jobs will disappear, and they will be replaced by AI systems. It's a scam. Whatever artificial intelligence might be, it isn't intelligent. AI has a serious problem which the proponents won't address. It is tied to the past; all it can do is work with what's already been digitised. It is blind to most of what we know.

There are endless definitions of intelligence, but they have one core criterion: intelligence involves solving unforeseeable problems. AI can only address what we already know, and often it gets that wrong. ChatGPT will state as facts things which aren't. They say that AI can do things no human can do – but so can a stapler. And so can a pair of scissors. Unless the data already exist, AI cannot solve problems that demand intelligence. It's fast, but dumb.

The proponents of AI are devoted to hype. They insist their devices are intelligent to boost their own public reputation. And everyone falls for it. We have all heard of robotic surgery – robots taking over the operating theatre. It's hype: they are micromanipulators created by engineers, not robots. The first was used to dissect chromosomes from the cell nucleus and was made by a brilliant biologist-turned-engineer, Robert Chambers – back in 1912. Today's absurdly named "robotic surgery" is a computerised version of Chambers' innovation. Robots aren't involved; it is the human surgeon that controls the operation.

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Robotics has long been over-rated. A moving automaton monk that seemed to walk and whose lips moved in prayer was commissioned by King Philip II of Spain over 460 years ago. It frightened the life out of the courtiers who saw it. A robot that could write any words you liked (dipping its pen into the ink, and programmed to write letters by the choice of cams selected in the mechanism) was constructed in Switzerland by Pierre Jaquet-Droz in 1774. The first robot to respond to voice commands was Eric, invented in London by William Richards in 1928. Four years later in Brighton, Harry May unveiled Alpha, which would fire a pistol on May's command. It once did so at the wrong time and shot its creator through the hand.

There is a persistent tendency to pretend that electronic systems are close to living. Grey Walter of Bristol demonstrated his tortoise-like robots named Elsie and Elmer in 1949. The BBC reported that they responded to external stimuli "in a completely lifelike manner". As a perfect example of the hype that always surrounds the subject, Walter announced that his creations were as intelligent as a two-celled organism, and he gave them a Latin name, like any living creature: *Machina spectulatrix*.

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Nobody has learnt the lesson. In today's world, people cannot wait to dignify electronic robots with life-like attributes. In 1984 Christopher Irgens described how cybernetic robots were being developed. They would learn as they went along and would take over most of our daily tasks. He demonstrated his robot Topo offering a cup of tea to the interviewer on BBC television's 'Afternoon Show'. That's almost 40 years ago. When Hanson Robotics' lifelike creation Sophia (pictured) appeared as a guest on the Jimmy Fallon TV show five years ago Fallon said she was "almost alive". She was later issued with a personal passport by the authorities in Saudi Arabia, as if she were a person. Sophia is a doll. A cleverly designed doll, sure, but a doll – a doll with a human's passport.

Digital automation will free us from drudgery. It makes tedious manual design a thing of the past and will automate dreary maintenance tasks. And (like every technological forward step we have ever taken) it will free people from tedium. But – like the futile promise of the 'paperless office' – its future is far less mysterious than its proponents like to claim.

Digital automation will help you design and test prototypes, and make it simpler for rivals to steal your ideas. Technology has been replacing manual labour for a thousand years, and the promise of the new robotics will open doors to vast new areas of achievement. But make no mistake – it isn't new, it isn't intelligent, and it will still need an engineer to make it.