

200,000 years of brain and technology

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Already with the appearance of modern man, some 200,000 years ago, man had three important techniques at his disposal: 1. Fire (and much later electricity and nuclear energy), 2. Leverage (hammers, scrapers and a little later wheels and pulleys, crankshafts and hydraulics) and 3. Language (religion, ethics, philosophy & logic, law, mathematics, economics and (much) later code). Language is perhaps the most powerful technology, but has only taken its crowning position in the twentieth century. What does this mean for (applied) psychology?

Last week I wrote: "just now that technology has come through code in the linguistic domain (programming language), there are opportunities for applied psychologists to help develop technology that contributes to an inclusive society". Some programming languages have arisen in psychology, precisely because in computational theory psychologists have brought models to simulate and possibly "explain" human cognition and behaviour. According to computational theory, our brains would work as a CPU, a central processor, that converts incoming information through thought processes into behaviour. The conversion from input to output takes place on the basis of 'software', which is either inborn, or has arisen through learning and experience. For good reasons, the computer as a metaphor for our brain is now (largely) abandoned.

Unfortunately, in psychology the realization has also disappeared that code can serve as a good description of mental processes, or at least can be used to programme the digital "environment" in which people live. If this environment is optimally designed, people will become the best they can be in many practical areas, from education to sport and from art to care. These devices, for example a digital learning environment or a drawing program, are intended to facilitate and stimulate psychological (cognitive, emotional or behavioural) processes within the user. These are 'psychological' tools, and it is therefore useful if psychologists can help manage and (co-) design both tooling and usability. In our psychology faculty, learning to program is mandatory for all students. Psychology arose from philosophy, of which logic forms a core part.

It is for good reason that Newton called his revolutionary Principia (1687) a philosophy (*Philosophiae Naturalis Principia Mathematica*); the great philosophers of the Enlightenment, as well as those in ancient times, were both philosophers and mathematicians. Newton brought about argument, a linguistic (philosophical/mathematical) description of the practical mechanics that modern man had at her disposal since it came into being (levers: hammers, scrapers and even later wheels and pulleys). A good theory turned out to be extremely practical, and language (mainly Latin and mathematics) took the lead more and more. The third great force - fire (energy sources) - was also generalized and extended linguistically/mathematically in arguments to electricity (Maxwell 1831-1879) and shortly afterwards to nuclear energy (Einstein, 1879-1955). But it was not until the computer age that both mechanical and energetic processes could be controlled directly through machine language (and later more abstract "symbolic" code). With this, language had taken up its crown position as the cardinal technique.

For many reasons it's no profession to learn to deal with smart technology. Especially not because this kind of technique is designed so intuitively that sometimes a chimpanzee can work with it (only the glass plate has to be thickened). However, learning to design and build smart technology to get mental processes going is a profession. It is here that I think there is a future for applied psychologists.

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