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This Changes Everything – ICT and Climate Change: What Can We Do?

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This Changes Everything (Invited Paper)

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1 Existential Challenges

"I denied climate change for longer than I cared to admit. Not like Donald Trump and the Tea Partiers going on about how the continued existence of winter proves it's all a hoax.... I told myself the science was too complicated and the environmentalists were dealing with it.... A great many of us engage in this kind of climate change denial." Naomi Klein [1]

This Changes Everything. Many of us are likely to associate this phrase with Steve Jobs' introduction of the iPhone in 2007. To be sure, most of us are enthusiastic about information and communication technology (ICT) precisely because we believe and hope that it will change everything – for the better, we presume. But beyond the iPhone and ICTs more broadly, there are clearly other candidates for the "This." "This" may be the impact of the oncoming bioinformatics redesign of species – for example, chimeras supplying organ replacements and skin regeneration techniques. "This" could be the fourth industrial revolution of artificially intelligent robots set to upturn our economies with the automation of much un-skilled and semi-skilled work. But "This" is also, without question, the greatest challenge of our age: climate change.

Since 1974, the Human Choice and Computers conference series has consistently fostered innovative thinking about the interfaces between society and technology. Such thinking always reflects the social concerns of a specific time: Globalisation in 1998, Choice and Quality of Life in 2002, An Information Society for All in 2006, What Kind of Information Society in 2010, and Technology and Intimacy in 2016 are key examples. The number and range of challenges facing the world today at the interface between society and technology are not only mounting, but are increasingly doing so at the deepest levels of the existential – not simply in terms of meaning and justice, but, most fundamentally, in terms of the survival of different species and ecology generally.

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History of Early Australian-Designed Computers

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Abstract. This paper examines the development of a number of computers designed and built in Australia that really changed everything! Australia designed and built CSIRAC, the fourth stored program computer in the world. Prior to this however, in 1913 the Automatic Totalisator, although not a computer, performed many of the calculations later done by computers. SILLIAC, based on the ILLIAC was built in Australia. UTCOM and WREDAC, although built in the UK, were extensively modified in Australia. In the early micro-computer era the Australian designed and built Microbee computer was used extensively in homes and schools. The paper then discusses the ill-fated project to design and build an Australian Educational Computer. These computers were each designed and built for a purpose and the paper looks at the people, technologies and events that propelled this process. Actor-network theory is used as a lens for understanding the human and non-human elements of these historical developments.

Keywords: Computers · Design · Manufacture · Uses · Australia
History · Actor-Network theory

1 Introduction

Although Australia is rather different to Eastern European countries, there are some commonalities in the need to develop their own computers and ICT industries rather than relying on those of the large developers elsewhere. Australia is not currently well known for designing and manufacturing its own computers, but has an important history in this regard.

Although not in any way what we would regard as a stored program digital computer, the Automatic Totalisator (1913) used many computing concepts in performing mathematical calculations to determine the betting odds in horse racing. Arguably the world's fourth or fifth stored program digital computer, CSIRAC was designed and built in Australia in the late 1940s. SILLAC (based on the ILLIAC computer), but not an exact copy, was built in Australia and became operational in 1956 as one of the most advanced computers in the world at that time. Although not designed and built locally, UTCOM and WREDAC (1956) were significantly modified for Australian use.

Moving to the 1980s and microcomputers, the Microbee which was designed and built in Australia for both home and education markets sold 70,000 to over 3,000