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When we first started interacting with computers.....

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When I joined the EMI Electronics Ergonomics Laboratory in 1968 interactive computing was just becoming available in business and industry. EMI was at that time a manufacturer of computers and Brian Shackel, the Director of the Laboratory, had already been involved in 1959 in the console design of the EMIDEC 2400 so you could say computer ergonomics had already begun. However, by 1968 mainframe computers could be used in a 'time shared' mode so they could support simultaneous 'conversations' with lots of users in remote locations using interactive terminals. At first the terminals were teletypes, glorified typewriters, but they were soon replaced by vdus (visual display terminals).

One of my first jobs was to do an observational study of engineers and administrators in EMI using teletypes. There was an obvious excitement in being able to work with a computer without having to visit the computer centre but the frustration of the process was quickly apparent. I calculated that only about 40% of the time using the terminal was productive in the sense that users were able to make progress with their tasks. The other 60% of the time was spent staring morosely at the terminal waiting to see if the computer would respond, wondering what some cryptic error message might mean or wading through a thick manual to see what strange input would achieve the function you wanted. The issue of the computer's response speed was very important then because you could be left in the middle of a process for what seemed an eternity (probably a couple of minutes) before you got a response. All these delays proved very disruptive to the thought processes involved in the task.

We soon realised that there were a lot of ergonomic issues to be worked on if interactive computing was to become an effective form of what we then called man-machine interaction. When Brian Shackel and I moved to Loughborough University to set up the HUSAT (Human Sciences and Advanced Technology) Research Institute in 1970 one of the major aims was to work on the ergonomic issues of the burgeoning commercial applications of interactive computing. There were a number of traditional areas of ergonomics that were relevant; the hardware design of the keyboard and the screen, workstation design including the desk and chair and environmental factors, especially lighting. However, by far the biggest challenge was to make the conversation between the user and the computer intelligible to the user, a subject that rapidly became known as software ergonomics. The dialogue with the computer was particularly important because the use of interactive terminals was bringing a wider and wider range of people into close contact with a computer. Before interactive terminals became available conversing with the computer was the province of computer specialists working in the hushed and air-conditioned halls of the computer centre and they spoke the private and arcane language of the computer. But now clerks, managers, engineers, accountants and all sorts of other people were using the computer and they were not trained in the language of the computer. We called them 'naïve users' and devoted our time to devising more natural and easy forms of 'human-computer interaction' for them. Not that calling people 'naïve users' was always a good idea. I once told a senior financial manager in EMI that he was a 'naïve user' and he said he was not accustomed to being called naïve by junior members of staff. My departure soon afterwards was, however, not a consequence of this folly.

Over the past 40 years the number of professionals working on human-computer interaction has mushroomed and every IT firm now has usability engineers working to ensure products can be used by their intended users. Ergonomists can be justly proud of the part they have played in making it possible for so many people to 'plug in and play', that is, to start up a complex piece of software they have never used before and do something useful with it first time with no specialist training and probably only a cursory look

at the manual. But this is still an unfolding story – when I tell the people of my first observational study and the 60% of wasted effort they tell me that it is often not much different today! We may have faster and easier to use machines but the functions they perform grow in number all the time and become more complex. And we can now reach out beyond the computer we are using and get lost on the internet. Interactive computers are now consumer products so the range of ‘naïve users’ is now colossal. We also expect computer applications to be universally accessible so that we do not produce a digital divide in which some people are excluded from all the benefits that the widespread use of the technology can provide. In short information and communication technologies are now ubiquitous and continue to develop rapidly. As a result the bar for delivering usable systems has to be set ever higher and addressing emergent human issues is always unfinished business. The process that started 50 years ago will surely remain a major challenge for ergonomics long into the future.