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# Erase old programme and launch new version

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Computer science is an out-of-touch, dying discipline. It must embrace interdisciplinarity to survive, writes Neil McBride

Go into a computer science class today and you may well be entering a time warp. Warm, comforting, cocooned from the changing commercial world, you will hear the pure tones of a computational discipline. Algorithms, operating systems, data and program structures appear before you on the whiteboard. There will be an air of certainty and assurance. It's a scene that has remained unchanged for 30 years. And one wonders: have computer science academics lost touch with the real world?

There is no doubt that computing is in crisis. Applications for university courses fell 11 per cent in 2006 alone. And it is a global problem. The number of US students choosing computer science dropped 39 per cent between 2000 and 2005. In the UK, computing departments are combining with business or downsizing. Their research base is weak, lagging behind that of industry. Concepts such as service-oriented computing appear on the university agenda only after becoming current practice in industry. It is a dying discipline, an old man who has run his race well. He changed the nature of human existence, but perhaps it is time to let him go.

The environment within which computing exists has changed. Computer science has lost its mystique. In the 1970s, it was the realm of the experts.

Programming was difficult, laborious and required significant training. A high priesthood of mathematicians and physicists attended the mainframes in air-conditioned temples.

Today, it is part of the fabric of society. We are all involved with computers in business, leisure and the home. Programs that were part of university syllabus now run in primary schools. Web design, database building and application development have moved out of the laboratory into the street. The public perception of computing is that it is neither unusual nor inherently interesting.

In industry, the nature of information technology has changed. Business applications are rarely constructed from scratch. Companies do not hire armies of programmers. IT is seen as a service, computing a commodity.

Skills in IT departments centre on procurement, integration, evaluation, contract management and customer interaction.

This focus on continuous services contrasts dramatically with the philosophy of most computing curricula, which concentrate on building systems based on the systems development life cycle, a linear process of determining feasibility, analysis, design, programming and testing. It is an approach that is of declining relevance to industry.

For computer departments in universities in Europe, the US and Australasia, globalisation constitutes an even greater problem. Since the software can be transmitted almost instantaneously, why develop it in expensive facilities in the West? The very paradigms and skills that are dear to British computer scientists have been taken over by countries such as India, where 100,000 skilled English-speaking computer scientists graduate every year. Companies such as Microsoft and Intel produce innovative software in India

as a matter of course.

As enrolment plummets, the computer scientist blames the customers. If only potential students saw how exciting computing is, they would flood back.

But schoolchildren are not stupid. They can read the writing on the wall.

It is the computer science academic who is to blame for the state of computing.

First, they have failed to engage with society, to properly acknowledge the social embedding of computing and its changing role. Second, they have not put sufficient effort into searching for new paradigms. Like physicists at the start of the 20th century, they are not thinking outside the box.

Third, they have failed to engage with industry.

Look at the contrast with molecular biology, where academe leads industry.

A biochemistry PhD is a key to an industrial post. In computing, a PhD is not a gateway to industry. It may even be frowned on.

As an old oak tree falls to the ground, buffeted by storms, rotting inside, computing should make way for new saplings to emerge. The new discipline will be complex and divergent, based on relationships. Instead of being narrow and blinkered, it will be outward looking, drawing ideas from biology, design studies, history, geography. It will be creative and risk-taking, an interdiscipline rather than a discipline.

In 30 years, there may be few computer science departments. Most will have given way to interdisciplinary studies and services departments that produce graduates who can control, develop and manage the IT resources an organisation needs.

So let us say goodbye to the respected old man. Let us look to the new generation of interdisciplinary computing. Let us lead the young by the hand and create new paradigms and new directions for a new discipline.

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