From Warwick University to Apple Inc California…

Less than ten years after graduating from the Department of Computer Science (DCS), Hugo Fiennes was head hunted by Apple Computer Inc California to manage the hardware team responsible for a little known device called an 'iPhone'. One year later the 'iPhone' is named Time magazines invention of the year, selling by conservative estimates over half a million units in its first weekend…So how did a relatively unknown student go from hacking code in the "Fyshbowl" to working on one of the most iconic multimedia smart-phones of the 21st Century?

Rewind to 1994

Chandler, Monica and Friends have just premiered on US television, the first web browser "Netscape Navigator" is circulating the information super highway and a young Hugo Fiennes has arrived at the University of Warwick to begin his undergraduate studies. At 23 Hugo was older than almost everyone else when he first burst in on the infamous Warwick bubble. He didn't take a gap year after A-Levels; he took five, during which he built up his own company selling communications software and expansion cards for the now legendary Acorn Computers. Sitting in the kitchen of his halls of residence, surrounded by a group of teenagers Hugo is feeling a little bit shocked at first, but trepidation soon turns to excitement as everyone becomes intimately acquainted with the student union and the tremendously potent wine & cider cocktail known as the blastaway. Of course back in 94' halls didn't have network connections; there were few mobile phones and no text messaging or social networking and so students tended to rely on union posters, flyers and good old fashioned word of mouth to organise their social lives.

Before we had Windows

To many the 1990's is synonymous in computing terms with the rise of Microsoft Windows, "but we didn't really have PC's in DCS" say's Hugo. Students hacked out code on Solaris boxes in a glass walled laboratory affectionately nicknamed the "fyshbowl", and in there interests lay more in new fangled web browsers and debates as to whether bash or zsh should be crowned the one true shell. These were the days of the UNIX Operating System, windows was still in its

infancy and development environments consisted of nothing
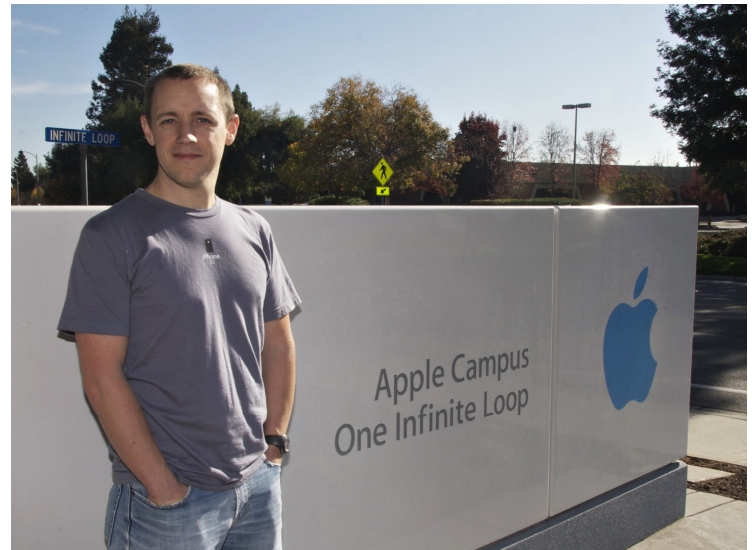
Hugo Fiennes outside his Apple HQ office in California

more than text editors, compilers and low level optimizers. For many DCS students, the fyshbowl was home: it engendered a truly collaborative liberal atmosphere, supported in part by a AM-radio quality jukebox that students had fashioned from a homebrew multi-user chat system.

Third Year Project

In 1997, after years spent building everything from a barcode reader to ping pong on a scope, Hugo was ready to put everything he had learned into practice building a networked webcam. Today at Apple, Hugo can count on the support of hundreds of people from a variety of groups, during his third year project however, the only person he could turn to was his supervisor Dr Roger Packwood. Despite the fact Hugo disagreed with Roger over the future of the ARM processor chip used in his project, Hugo was particularly grateful for his bravery in agreeing to supervise a system than had to be constructed almost entirely from scratch. While the idea of video conferencing is now a matter of course, back in 1997 the entire project was considered by many to be a truly heroic undertaking. The project centred on using a Cirrus ARM7 processor that was so new it still had PROTOTYPE stamped on it. Hugo's first challenge was to figure out how to wire wrap to a 200 pin surface mount chip. The final system was composed of the CPU, an Ethernet controller, a DRAM SIMM, a boot

EPROM and a webcam originally designed to connect to a PC's printer port. Subsequent tasks included writing an Operating System, a basic TCP/IP stack and several hardware drivers before finally integrating some fast JPEG code which an enterprising Mr Fiennes had managed to talk ARM into giving him. A patchwork quilt of hardware and software, the networked webcam drew on all of the courses Hugo had followed for the previous three years and when finished it proved to be a resounding success. An impromptu transatlantic video conference between the DCS hardware laboratory and a software company in the US showed that Hugo had achieved all he could with the resources available.

MP3 revolutionises the music industry

After graduation in 1997, Hugo continued to undertake the contract work that had supported him financially throughout his time at University. In parallel, Hugo pursued various independent projects, one of which was an in-car MP3 player that was inspired by the jukebox software in the fyshbowl. Publication of the project on technology website, 'slashdot' left Hugo overwhelmed by interest and eventually led to the formation of his second company, 'empeg', to which he recruited a number of fellow Warwick graduates. Significant advances by the team in digital audio meant it was not long before empeg flashed up on the radar of market leader 'Rio' who shortly thereafter acquired both the technology and the staff. In 2001 Apple announced the release of an MP3 player known as the 'iPod'. With its sophisticated, easy to operate technology, the iPod would eventually go on to dominate the entire MP3 market and become synonymous with the very idea of a mobile digital jukebox. In pursuit of the company's objectives, iPod research & marketing budgets were increased way beyond their competitors and human resources were tasked with hiring the best developers in the field including Hugo and his team.

Apple finally gets their man

With the continued dominance of the iPod and the remaining manufactures fighting over the scraps of the market that were left, Hugo eventually succumbed and replied to the Apple head hunters. After two days of intense interviews he was offered a role working on a top secret project that he was told was "very cool"

and would have him jetting between Cambridge, Cupertino and a factory in China. Four months later with a US work visa in hand, Hugo and his wife Claire found themselves on a plane heading for northern California. While not quite as warm as Hollywood, the weather is excellent most of the time and since California is particularly diverse, it is easy for Europeans to adjust. Although 6000 miles away, Hugo can still get Strongbow cider on tap from any number of local Irish pubs and just recently he found a place selling Colman's mustard and chocolate Hobnobs. Despite living in a country where the SUV is king, Hugo prefers to cycle the taxing 25 mile round trip between home and office whose address in Cupertino is ironically 'one infinite loop'.

Pushing the boundaries

On a day to day basis, Hugo is in charge of the team responsible for the hardware side of the iPhone. "Working on the iPhone is very much like working for a small start-up company" explains Hugo, "albeit there are significant resources to draw upon when you need them. The direct result is that we can get a lot done, very quickly. The first iPhone had only a handful of people in the core electronics team, but they were supported by hundreds of specialists from other groups including industrial design, mechanical engineering, touch, marketing and software". When it comes to deadlines, everyone in Hugo's team does whatever it takes to get a great product out of the door, whether that's triple checking a PCB layout at midnight before it goes out to be fabricated, tracking down an elusive "maybe software, maybe hardware" crash, or staying up 27 hours straight to ensure factory shift workers fully understand the correct way to put something together. Hugo contends that the biggest challenge facing his team is to push every component associated with the product to its limits. The next version of the iPhone will have to be smaller, faster and more fully featured than any of its competitors, if it is to rival the enormous success of its award-winning cousin the iPod.

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