Personal and career development in engineering

Life as a Digital Communications Engineer

I/V
How did you get where you are in engineering?

Steve
Back in my 'O' level days I was making career decisions or subject decisions that pointed me towards an engineering career and probably based principally on my interest in little bits of circuit construction and, not really design, just sufficient to support my interest in music, so various effects boxes and gizmos were made for guitars, but the interest was in the technicalities of what could be done. I suppose the home computer was all the rage at that time as well and one could get a Spectrum ZX81 with 16k ram pack, and that seemed very exciting at that time, and inspired me somewhat and I took on a programming course, computer science at 'A' level, along with a bit of maths and physics, and felt that that would set me up as well as anything for an engineering degree, and having found a degree course and a sponsor I actually ended up on a Masters programme at Bradford, EEng, MEng in Bradford, which was a four-year course sponsored by Marconi Instruments where, through the first three summers of my degree I spent time in the production, commercial and engineering functions, so that by the time I'd graduated and completed my Masters project I had some grip on the technicalities of engineering, electronic engineering, but also had an appreciation of some of the wider management and marketing, and business issues that are relevant to the engineer.

I/V
So how much of that was planned? It sounds much planned as you tell it.

Steve
Well in terms of electronics as a subject it seemed like that was a sufficiently precise description of my career objective at 'O' level and 'A' level stage and I suppose my interest in circuit and software design, for example, was satisfied in the early stages of my career because that was the very kind of work that I got into. So in that sense to get to that starting point it was planned, without a doubt, but by that point I also had an appreciation that electronics is more than just a bit about circuit design and constructing amplifiers in your bedroom, and so from that graduate position the whole far wider field of engineering was opened up. Engineering, rather than electronics, if you like and I suppose there have been some steps which have been, which just they were the next step in front of me which I took, moved into project management, for example, but equally those moves made me aware that I was interested in more than just the electronics of engineering. The management part then was in a sense just as fascinating as the technical stuff was fascinating to me some years beforehand when I embarked on my degree course.

I/V
If you had to think what where the things that helped you most, things that you had to overcome - what would they be?

Steve
I suppose I had to overcome a slight aversion to mathematics, it wasn't my strongest subject at school, although it wasn't appalling but I'm sure that just about everybody who graduated with me had done better in maths than I had, and to some extent that was a drawback, but maybe more of a drawback to getting qualified than actually to practising. I think I was held by an attitude which said that rather than complaining about something or moaning about something, I would try and resolve it, and so obstacles were encountered, maybe in design or

in progressing a project or an activity, I would try and find out why I, why it couldn't progress and do something to change that.

I/V
Did you learn that or were you just born with it?

Steve
Oh I'd like to think I was born with it but I don't think it's true, and I think it's if you're, I suppose I've had objectives, I've had if you like job objectives or activity objectives, and also career objectives, and once an objective is identified it becomes easier to see what steps have to be taken to achieve that objective and so maybe the bit I've really learnt is to be objective-oriented in the way I plan my work and plan the things I want to achieve, how's it going to be when I've got there, and then working back from that I must handle the steps that have to be put into place, and then it's easier. I guess that way round it's easier to see, it's easy to identify the step which is not working, if you like, the step which can't be made, and then one can then go off and work on that.

I/V
Do you write these down? Do you have a career plan?

Steve
No, I don't. I have a career plan which is in my head and it's one which has developed since graduation, and clearly the closer one gets to the real engineering world, the bigger one sees it is, and the more opportunities there are within it. The opportunities within engineering are huge, whether one wants to be totally technical, totally commercial, or somewhere in between. Your engineering skills, the disciplines of problem-solving, and so on, are still very applicable across the whole spectrum of engineering activity so that yeah, I mean I don't have a little book of like Steve – bright ideas, but I suppose I've developed a few principles which have stuck.

I/V
Okay, if we went on to, if somebody asked you what it's like being an engineer, could you describe a project or the sort of things you do really as an engineer?

Steve
Okay, I suppose one of the most interesting projects I've worked on was the development of a test system for GSM mobile 'phones, and for me it was very satisfying because I was launched into the project and told to come up with a design of a system that would do the necessary testing, and knew nothing about the system to be tested, so I had to get to grips with a whole load of new technology and terminology in the first instance, and I then had to understand the electronics and the software, and signal processing one could do to get to solve the technical problem that was presented. And then had to manage a team to implement all these technologies to solve the problem, but then manage that through to completion and saw that in the end, having listened to the problem, understood the technologies that were involved, used the technologies and delivered the product, we had indeed solved the original problem. So for me that total process thing was very gripping, and within it there's all that learning going on which, to me, is just about an ideal combination of activities.

I/V
Have you changed the way you learn, I mean are you a jump in first and read about it afterwards person, or the reverse?

Steve
Well I think there's been, there has been a change in the way I learn. I think I would liked to have been seen as a very practical person, very hands-on and would leap into a problem and start fiddling with the hardware or playing with the software to crack a problem, or get to the bottom of it, but now I think I'm happier if I can get a brief on a subject first, and then dive into that practical experimentation. I think I appreciate an orientation to a problem before I dive in, and I guess it makes me feel that I can probably be more effective in learning that way round.

I/V
What do you do when you stuck in a problem, what's your technique for getting unstuck?

Steve
Well I guess it depends on the kind of problem, but I would be very quick to call in respected and trusted colleagues, and clearly there are some problems which can be brainstormed, and there are some problems in which you simply need to take on experience or insight that somebody else has, and there will be times when a problem simply has to be put on one side. I suppose sometimes inspiration will strike and you can go back to that problem with new ideas, new approaches, and what looked impossible a week ago is quite straightforward today, but I wouldn't have a single way of addressing a problem, and the nature of the problem is significant as well. Some technical problems, for example, can quite readily be solved with a little team brainstorming, and that was a technique which I used when running a software team, for example. My current role, which is more marketing-oriented, is far less deterministic, if you like, the kind of problems I'll be addressing are trying to estimate market sizes, or the likely success of a new technology, a communications technology.

I/V
So have you left the design process behind really, the technical design process behind now?

Steve
Oh, I've left the technical design process behind for sure and that's a conscious decision I've made working in the field of digital communications, I mean I bluntly accept that in two or three years' time, if I'm no longer hands-on designing, then my design skills will be outmoded, outdated. On the other hand, I have a working grip on the technologies that are involved and I would like to see my current role as being able to go out into the marketplace and understand somebody's problem, and have enough of a grip on the technology to understand what technologies, both hardware and software, we can use to frame an appropriate solution to that problem because fundamentally if you're not solving somebody's problem then we have no basis for running for a business, and we have to be solving someone's problem, and I feel I can bridge the gap between gathering the needs of the marketplace and proposing technologies which our hands-on design guys can then realise in the form of new products.

I/V
If we can turn to the scope really – if you're talking to a young engineer and they say well, what sort of scope is there in electronic engineering for the future, what would you say?

Steve
Oh well I'd say there was huge scope. I suspect that the rate of change within the industry will continue to increase, and where fifteen or twenty years ago a graduate might start designing, almost certainly doing circuit design, hardware design, rather than software since software was very limited that long ago, they could be designing products that might take five years to deliver to the marketplace, and those products might have a ten year life in the market, but the lifecycle is now squeezed such that one may spend a year or eighteen months developing a product which will survive only for three years in the marketplace. And this is particularly true in my field of digital communications, and to be effective in designing to such short timescales, and in such a fast-moving market, it's not adequate for an engineer just to sit at a bench and be technical, they have to have an appreciation of the commercial imperatives of the type of business, they have to have their own understanding of the market, not just be fed requirements from some expert who knows just what we should be doing, they should themselves have a grip on the marketplace. So, even if one was committed to a very technical career in engineering, there's a need to have an appreciation of the manufacturing discipline, of the marketing discipline, of the whole of all the functions that contribute to the business. But equally as an engineer I think there's huge scope for contributing with the problem-solving skills that you learn as an engineer, for example, and with the technological appreciation that you gain there's opportunity to contribute right across the business from of course the design engineering area, through to product support, and to manufacturing, and to marketing, and even to the selling function. I think engineers often have something of an aversion to the commercial side of the business, but fundamentally if there wasn't a

commercial side to the business there would be no opportunity to do the engineering that's so often the attraction to this kind of career in the first place.

I/V
One last thing - I know you became a Chartered Engineer – could you say why?

Steve
Yes, I suppose I view my engineering as part of a career, not as a job. I view it very much as a profession and wanted both to recognise the professional body and to be recognised by it, and chartered status is recognised internationally, and within my current role quite a bit of travel is involved and one is presenting, if you like, a uniform credential as a Chartered Engineer where everyone goes in the world. And also there was a sort of self interested element in that I wanted to benchmark my own achievements and my own progress against a recognised industry standard, if you like.