Craig Hart – Talking Electronics Bio

Age: 51

Location: Adelaide

Profession: Senior IT Engineer

My first exposure to TE was as a teenager in the mid 1980's, with the 'cover projects' series which I saw in the newsagents. I didn't buy any of them, but did read them as much as I could standing in the newsagents shop after school. at the time I was interested in electronics and computers and had some experience with software on an early 8 bit Z80 based computer called the Sega SC-3000, and making Dick Smith Funway kits.

I first met the TEC around 1985, thanks to a TE magazine - possibly issue 13 or 14, which I saw in the local jewellers shop - who sold a few kits on consignment at the time. I saved my pennies and purchased a bare TEC-1B PCB (White on Red batch!) by mail order, then proceeded to buy parts as pocket money allowed, a little every few weeks. I eventually got the TEC going without keyboard buttons or 7-seg displays, but the start-up beep was very rewarding - and it worked first go.

With time the TEC got finished and I religiously explored all the magazines had to offer. I purchased an SPO256 speech chip from Tandy in a clearance sale and built the interface, eventually succeeding to make a working design - my first ever scratch prototype.

By late 1986 I was looking for a job and TE was actually only one suburb away from my childhood home of Mentone, so I dutifully packed my precious TEC and veroboard speech module into the car, and talked dad into driving me up. I met Colin and showed him my work (after 45 minutes typing the opcodes in by hand); he was amazed and impressed at what I had created. He gifted me a speech module PCB which TE had developed independently; the designs were virtually identical, being basically a 'straight off the datasheet' design.

After a few regular visits I broached the subject of a job, and received 3 hours a Saturday working at 35 Rosewarne Ave. I was hooked. This evolved into a full time apprenticeship in 1988, doing just about everything from kit assembly, phone orders, mail runs, to design, testing, kit repair (from readers sending in things they couldn't get working), marking the digital electronics courses, and later, working at the TE shop.

TEC wise, I came to TE at a time after Ken Stone had left, so I volunteered to be the in-house computer guru of sorts. I burned ROMs by day and programmed by night. TE used an ancient Z80 development board called the MicroProfessor-1 to burn all ROMs, as it was considered more trustworthy than the in-house design! Myself and TE staffer Paul set up a 286 with a desktop publishing program Ventura Publisher that issue 15 was produced on. I worked closely with Jim on finishing JMON and issue 15, for which I wrote the article to go with the speech module, did most of the artwork, diagrams and lots of other small jobs.

I also dabbled in the Microcomp and model railway computers, but the TEC was where all the focus was.

One TEC peripheral design never made it to market. It was called the MEGA-SIGN and was a 7-seg display made of incandescent light bulbs - 4 or 5 to a segment. The PCB was laid out such that modules could be stacked horizontally or vertically with connectors at each edge that lined up. Hence, only one cable was needed. It loaded the Z80 bus so much that each board had a bus buffer chip on board - 74LS245 or similar. A PCB run was made but the kit never saw the light of day.

Another TEC project that never really got going, was a video adaptor for CRT displays/televisions. I never saw it, as it was worked on before my time/externally; it was effectively cancelled as it was too complex and costly - far more complex than the TEC itself (30+ chips) - and had rather poor quality output.

I was interested in CAD and helped TE move into 'modern' PCB design with a Roland plotter and Protel Autotrax, with external help from Ken who by then had returned to TE as a sort of contractor, to take photos and get out his second model railways book. A number of small, simple designs (The GNAT FM bug being perhaps the first in-house board) made it to CAD but I decided to teach myself Protel properly by converting the TEC to CAD. Hence, the TEC-1C was born, complete with JMON ready mod and other design revisions.

Issue 15 was really the pinnacle of my time at TE - one that was worked on quite hard by almost every staff member, for over 12 months. The move to a PC and CAD were big leaps and there were issues. Ventura was unstable and the computer was barely powerful enough to handle the page complexity of a TE magazine. Jim took up residence at TE for several months to see the DAT board and JMON articles through to completion. Spending time with Jim testing, debugging, documenting etc. was very enjoyable and I learned a great deal, especially some of the optimizations to fit JMON into 2k.

And then, there was Peter Crowcroft. Peter somehow found his way into TE around the time Issue 15 was reaching readiness for printing, supposedly as business development manager tasked with helping TE offshore some parts of the business. Kit production, magazine printing, component sourcing and the like was supposed to be moved to China allowing TE to get on with design work. In reality, Peter learned all he could about the business, then at short notice left, returned to his adopted Hong Kong, and started kits-r-us. Out of kits-r-us came the SC-1, an obvious evolution of the TEC sharing much commonality of design, but with some modernization to use more modern components.

I stayed at TE until roughly mid 1991. My last magazine was the Six BD-679 Projects book; a book created around the fact that Colin purchased 10,000 BD-679s at a distributor clearance sale for something like 5 cents each. The book was created solely to sell this inventory at a profit!! By 1991, Issue 15 was out and the initial sales surge been and gone, so there was preliminary talk of Issue 16 - Jim had ideas about releasing his utilities ROM, commented JMON disassembly and more in Issue 16 - however when it because obvious that TE was in decline and that Issue 16 was unlikely to ever start (much less get completed), Jim moved on to selling his 'Jim’s Package' and ‘TEC times’ newsletter instead.

Eventually Jim produced some additional projects e.g. DAT-2 and 16k NVR but that was after my time at TE. These were the final ‘original run’ products for the TEC, as far as I am aware.

By about 1990, Colin's focus had switched to FM bugs, phone tapping devices and bug detectors, and the TE shop. The TEC was lost by the wayside. Manufacturing bugging was devices highly profitable but it was also legally dubious to do so. An article in the Age newspaper tipped of the Federal Police and TE was raided. As far as I know, the ensuring legal outfall eventually ended the business, not to mention the broader general decline of electronics as a viable industry in Australia.

Having left TE, I moved into computers and away from electronics, although I did CRT monitor, PC power supply repairs and other electronics work for many years. My TECs got set aside and eventually lost in one or more house moves.

Blast forward to 2019, where I discovered the vintage computer forums on Facebook. Jim Robertson happened to contact me via the forums, and lo and behold he was looking for a password for a ZIP file of source code from 1990 that he created in order to keep it out of Peter Crowcroft's hands. By no small miracle, I got the password recovered and for the first time in 29 years, we viewed code Jim had written all those years earlier.

I was then introduced to the TEC-1 Facebook group and had soon reacquainted myself with all things TEC and SC-1.

Today I have two TECs and an SC-1 (both modified in various ways), and a bit of a passion for all that was, as well as all that could be. The TEC Facebook group has been an amazing resource, and I'm thrilled to see the little machine I had a hand in 30-something years ago, still a success today.