

# The WROCC

The Newsletter of the  
**Wakefield RISC OS Computer Club**  
For all users of the Acorn and RISC OS family of computers

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## May's Meeting Report

CLUB UPDATE

By Steve Fryatt – [stevef@wrocc.org.uk](mailto:stevef@wrocc.org.uk)

The May meeting was opened by Chris, our Chairman, who reported – in his other capacity as Show Organiser – that the 2010 event had been a success given the circumstances. Numbers were down more than had been originally expected, even with our concerns over the economy: we suspect this was due to the complete lack of print advertising caused by failures at both *Archive* and *Qercus*.

Despite this, we managed to break even due to a last minute sponsor and the attendance of some additional exhibitors, meaning that we can contemplate doing it all again next year. Around £450 was raised for the Wakefield Hospice at the event, and Chris said that he hoped to be able to get someone from the charity to visit us and collect the money in person at a future meeting.

With the preliminary notices out of the way, Chris introduced our visitor. Mel Pullen's first



Picture: Colin Sutton

contact with what was to become Acorn had been while working as a contractor for a travel agent around the corner from their offices on Market Hill in Cambridge. He was offered a

## **Our Next Meeting – Wednesday 7th July** **Mike Cook – 3D Print & Computer Aided Manufacture**

The arrival of personal computers with printers and plotters opened up a world of word processing and desktop publishing. Now, a similar revolution is starting to happen – only with physical objects instead of ink on paper. Using computers to create 3D objects has been available to industry for years, but with costs coming down the DIY option is entering the reach of everyone. With the results only limited by imagination, what will you make?

job by Chris Curry, and joined the fledgeling company to help sort out their chaotic business practices.

### **Before the Micro**

These were the pre-BBC days, and the Cambridge Processor Unit was still involved with projects that have now largely been forgotten: systems for petrol stations, and microprocessor controlled fruit machines as described by Steve Furber during his talk at last year's Retro Reunited. These were the early days of computer technology in casinos, and Mel recalled the systems being returned for analysis and reprogramming when punters had struck it lucky.

Before the Atom, Acorn had produced the early System machines and Mel talked about these and about the interesting approach to software source control employed by Sophie Wilson at the time. To make changes, the contents of a ROM would be disassembled, altered and re-assembled before being blown into a new chip; the checksum would then be written on the case, and that number – held in Sophie's head – would provide details of which revision was which. It would seem that this could make it difficult for others to work on the code!

Acorn's initial bid to produce a computer system for the BBC's Literacy Project had lost out to the NewBrain, and the engineers realised that a way to win the contract would be to offer the Beeb the facility of Telesoftware – the ability to transmit data over Teletext. This would obviously require hardware to receive the television signal and decode the data into a form that the micro could read and, once Acorn's second bid had been successful, the task fell to Mel to design it.

### **Teletext**

As part of the BBC's plans, the tuner was produced for Acorn by another company – leaving them with the job of taking the signal from this and getting it into a form that the Beeb could understand. Reluctant to pay for a full set of custom integrated circuits, Chris Curry and Hermann Hauser encouraged Mel to go down the route of discrete components: leaving the computers's processor to do much of the work.

A prototype was duly built in wirewrap, and testing began. Unfortunately, the signal that was decoded – although present – was always garbage and, despite the best efforts of the BBC's transmission engineers who came in to help, no solution could be found. In the end Mel's lab moved from Market Hill to another of Acorn's sites on the outskirts of the city, in case local interference was to blame – with no effect. It was eventually discovered that a set of wires on one of the chips had been connected in the wrong order, and with this corrected the decoder started to work perfectly. As a fellow hardware designer, I could certainly sympathise with this!

As time went on, Mel joined forces with a group of other contractors to form SoftMachinery – who went on to do contract work for Acorn and other companies. As the comms scene began to take off in the 80s, it was their modems and software that powered many of the new-fangled viewdata systems offering emails and discussion forums, information and software to download over the telephone line.

### **A brace of Beebs**

One theme that seemed to be common through the years was a difficulty in getting money



#### **Wednesday 7th July**

Mike Cook – 3D Printing & Computer Aided Manufacture

#### **Wednesday 4th August**

ArtWork Animation – Richard Ashbery and ArtWorks 2

#### **Wednesday 1st September**

Peter Richmond shows us "Something on the A9home"

from Acorn on time. Mel described a number of approaches that had proved successful, but still there were occasional issues. One payment had been received in the form of a job-lot of Model A computers; in the end, these were upgraded to Model Bs and sold on at a decent profit.

Mel's involvement with Acorn had ended by the time the Archimedes came out, so although he was aware of the systems that we currently use, he had little direct experience of them. He had continued with the contracting and consulting, doing work for Sinclair and the mobile phone industry – the latter had ensured continued contact with ARM processors.

For a man who arrived with four mobile phones in his possession (which all needed to be silenced at the start of the evening), his predictions for the future of the humble handset were gloomy. Although the days of the

smartphone may be numbered, the future could well involve less generic units that do one job well but still retain connectivity. Watch this space, it seems.

### **Any questions?**

The evening ended with questions from the floor, including thoughts about the future of analogue teletext services in a digital age and (of course) where it had all gone wrong for Acorn. The ensuing discussion proved interesting, and we learned a few more anecdotes about the birth of the British computer industry.

At the end, those present thanked Mel for an interesting evening, mixing nostalgia with a look towards the future. It was only a pity that so few members were able to be in the audience to hear a talk which was refreshingly different from our normal topics.

## **The Show Behind the Scenes**

SHOW 2010

*By Rick Sterry – rick@wrocc.org.uk*

Other members have already written show reports, so I will not attempt to do the same. Instead, here are just a few snippets of things that happened behind the scenes from my point of view.

Although our annual RISC OS show may only last for a day, the planning and preparation work takes much longer, and starts months before the show date. This involves the entire committee, and others, with the bulk of the work falling on Chris Hughes as Organiser in chief, and Steve Fryatt as the producer of much of the artwork for adverts, and as the builder/maintainer of the show web site.

### **A change of space**

After looking at a number of alternative venues for this year's show, we did a deal with the Cedar Court Hotel whereby we could use a set of adjoining suites at the rear of the venue, including a boardroom for use as the show theatre, for an all-in-one price which was

substantially less than we had previously paid for the large Cedar Suite and the separate Garden Suite (the show theatre). The exhibition space seemed to me to be large enough for our current needs, but once Chris sat down to plan the table layout, we did begin to wonder if we could fit in all the stands – thankfully it worked out fine.

As we had not used those suites before, the first job to do was to measure up, which my wife Tina and I duly did. The rooms have various recesses and intrusions, and the usual problem is that when adding up all the individual dimensions along the sides of the room, they fail to add up to the overall dimensions, due to measurement errors or inaccuracies caused by cumulative rounding errors. Thankfully there was only one discrepancy, which I was able to resolve on the spot (I had initially recorded one particular dimension as 1.5 m instead of 2.5 m), and so I could then be confident that the dimensions were all correct to within 10 cm,

which is sufficient when dealing with things on this scale. The positions of power sockets and doorways had to be accurately plotted, as well as noting window areas with restricted headroom.

### Some careful planning

I drew the plan up using Xara Xtreme, which is a close cousin of ArtWorks, added comments, a key and a scale, and then exported it in ArtWorks EPS format for passing on to Chris to play around with the table layout in ArtWorks. It was very quick and easy to draw everything to a scale of 1cm to the metre, thanks partly to the screen grid facility, and also the fact that the length of the current line segment is displayed on the toolbar at the top of the screen. It was useful to be able to lay the plan of the 'new' suites on top of the one of the Cedar Suite, to the same scale, in order to get a better comparison of the available space. Having decided on the final table layout, Chris was able to pass on the completed plan and table layout in ArtWorks format to Steve Fryatt for use in the Show Guide and the show web site.

Mains power extension cables and socket blocks were needed for supplying power to the stands that require it. We have our own cables, as do the local amateur radio society, and these have been treated as a mutual resource for many years. They used to be stored courtesy of a chum of mine at his haulage depot

in Wakefield, but now they are now rather conveniently stored in a scout hut (the current HQ of the radio society) about half a mile or so from our meeting venue in Sandal. I collected these and kept them inside my house for a week or so prior to the show in order to be absolutely sure that there was no trace of moisture in them. They had not been recently P.A.T. (Portable Appliance Testing) checked, though this was not too serious as they have only been used occasionally since they were last checked, and it is easy to carry out basic continuity and earth leakage checks without the official test equipment. However, our man in charge of electrics, Brian Eves, had his own cables that had been P.A.T. checked within the past year, so he brought those along to use in preference to the others where possible.

### Missing the signs

As the exhibition rooms were at the rear of the hotel, it was necessary to put up our own signs to point the way from the foyer area. Alas, I did not estimate the number required very well, and I was left with too many right-pointing signs, and not enough left-pointing ones! I used my initiative, and in a few places inverted the signs so that although the show banner was upside down, at least the arrow was pointing in the correct direction. One well-meaning senior member of the hotel staff noticed one such sign at the bottom of a stairway, and 'helpfully'

The IconBar kindly recorded one of Rick's upside-down signs for posterity – although he may have preferred not to have had the recognition.

*Picture: Phil Mellor*



relocated it so that it was the correct way up, but not in plain view. When I noticed the missing sign, and it was rather a critical one, I mentioned it to the duty manager who was passing at that moment – I have known for some years as he used to be the manager of our original venue at Holmfield House (now the Holmfield Arms). The culprit also appeared on the scene just as I was asking where the sign had gone, and he explained what he had done and why. The duty manager then jokingly gave his colleague a severe telling off, rather in the style of Basil Fawlty and Manuel, only without the physical violence of course – most entertaining!

I answered a call of nature at one point during the morning, as one does, using the Gents up on the 2nd floor close to the show area, and found that the hot air hand drier was faulty, and the alternative roller towel dispenser had run out. I made a quick phone call to reception, and the toilets were very promptly cleaned and serviced. It's not all glitz and glamour being an assistant organiser, I'll have you know!

### **Charity collections**

I had somewhat rashly offered to remove anything left behind on the charity stall after the show. Shortly before the show closed, I went to look what I was letting myself in for, and my heart sank as I espied several old RISC OS machines, a CRT monitor, an ancient floppy-disc based word processor, a microwave oven in its cardboard box, a huge docking station for a Dell laptop, and the inevitable box after box of used floppy discs, software packages, and paper manuals. Just as I resigned myself to making several trips back home with the goods, I found that much of the hardware items were either sold and awaiting collection, or were being taken back by the donors. The microwave oven was nothing of the sort, just the cardboard box being used for other items – phew! In the event, I managed to squeeze all the items from the charity stall into the car, as well as the boxes of cables, the club's projector stand, and the blue plastic bin with the donated phones and ink cartridges.

I arrived home, and after grabbing a much needed mug of tea, set about sorting all the charity stall stuff out. In the event, there wasn't much hardware to go for W.E.E. disposal, so I was able to drop them off at the council's recycling centre on Denby Dale Road when I was next passing. The non-recyclable items such as floppy discs and CDs, plus the plastic cases they came in, went in the non-recyclables bin – there were too many to fit in my own bin, but my next door neighbour was very obliging as there was space available in his. I removed all paper inserts or instructions from the plastic software cases, as these could go in the paper/cardboard recycling bin, and the cardboard software cases could also go for recycling. I didn't feel the need to remove metal staples from the thinner printed manuals, but I had to remove the metal or plastic spiral binding from a great many thicker manuals. This was quite a long job, but I soon developed a rather effective technique which meant I could do each one pretty quickly. My paper bin ended up rather full, with a just little space left for our own domestic waste paper.

I delved into the plastic bags containing the donated used ink cartridges, and immediately wished that I had donned rubber gloves first. Some cartridges were leaking, and despite my best efforts to clean up afterwards, my right hand in particular was heavily stained for several days afterwards. Ironically, one of the reasons we did not accept toner cartridges, is that last year Chris Hughes had a similar experience to mine, only on a somewhat larger scale. I'm no longer keen on accepting ink cartridges either, in future! Only two phones were deposited, and it turns out that both came from committee members rather than visitors, and I subsequently added two of my own. I'm not sure we'll be bothering with them again, either.

My final jobs were to return the cables to the scout hut, and the projector stand to the sports club, and so now I can forget about the show for a wee while!

Like most of the rest of the paperwork for the Wakefield Show, the tickets are created on RISC OS using ArtWorks 2 and Ovation Pro. Until 2008 the process was fairly straightforward: the printing was handled by Crawfords, and we simply supplied a design for each side of the paper. This meant that all the complexities of cropping and unique numbering were “someone else’s problem” – a few weeks after the designs left us by email, a box of tickets came back in the post.

In 2009 we became faced with the task of printing the tickets ourselves. We dispensed with the need for tear-off stubs, but that still left the problems of producing 250 individually numbered pieces of paper. The conventional tools for this would be Ovation Pro or Ray Favre’s LaBella, but for a variety of reasons we preferred to stick with ArtWorks. Fortunately Martin Würthner’s addition of multi-page support and PDF import made the job a lot easier.

What follows is a guide to how we did it, using the latest versions of each piece of software. Even if you don’t need exactly the same result,



The ticket designs for Wakefield '07 as sent for printing – there was no need to worry about setting up sequential numbering

the process includes a number of useful techniques that could be generally helpful.

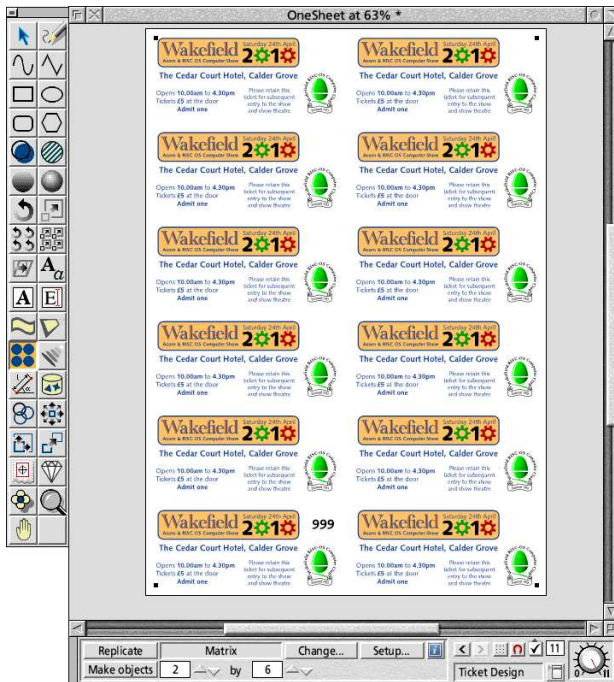
## Producing the design

Just as in previous years, the first stage of the process was to come up with a design for the tickets. Some quick calculations showed that if the design was 105 × 49½ mm, a 6 × 2 grid could be fitted on an A4 sheet of paper. Leaving an unprinted border of 5 mm around the edge of each ticket allowed for the printer’s margins at the sides of the paper and would give room for human error when using the guillotine between individual tickets.

A new ArtWorks document was opened, and a custom page size set from *File – Choices...* to match these dimensions. The margin was marked using a



The basic ticket design, created on a 105 × 49.5 mm page and showing the 5 mm margin marked in the background



The single ticket design, taken and replicated into a 2 x 6 matrix using the Replicate tool

rectangle on the background layer, and the design was created in the foreground. For the time being, a dummy ticket number of '999' was used as a placeholder to ensure that enough space was left in the layout.

Once the design was complete, the contents of the foreground layer were selected and copied into a new document on a portrait A4 page. The whole thing was then selected and converted to shapes (Ctrl-N) to remove any fonts; the resulting objects were then grouped together in two lots: the '999' and the rest of the design.

### Creating the sheet

The grouped ticket design was now on the foreground layer of the new document, which for clarity was renamed as 'Ticket Design'. The design itself was

selected and the Replicate tool chosen. A matrix 2 x 6 was set up, and under *Setup...* the X and Y offsets were set to 105 mm and 49.5 mm to match the finished ticket dimensions.

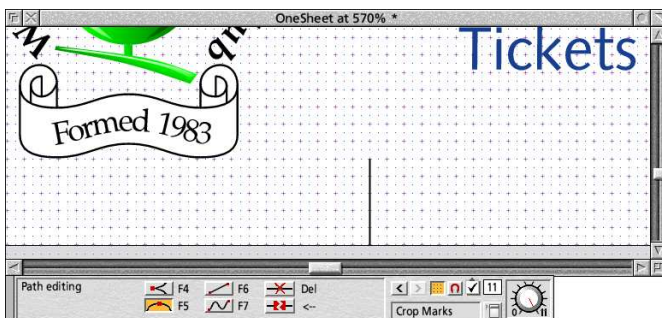
Going back to the Select tool, both the replicated designs and the '999' placeholder were selected, grouped, and then the whole lot centred on the page using the *Align to page* option in the Alignment dialogue (Ctrl-F9). Once ungrouped again, this left the finished ticket design spread across the page with all the correct margins set up.

The final touch was to add some crop marks to help Chris with the guillotine, so a new foreground layer was added (called 'Crop Marks'). Using a 1 mm grid with two subdivisions, and turning on the page rulers, 5 mm crop marks were drawn in by hand – this could

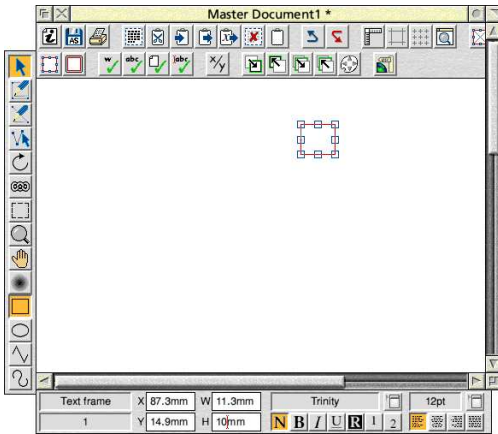
also have been partly automated using the replicate tool. With these added, the A4 sheet of tickets was saved as a new file.

### A numeric sequence

The next stage of the process was to produce the ticket numbers. This could be done by hand in ArtWorks, but given that we needed more than 250 spread across over 20 sheets of paper,



Crop marks were added to the page by hand, using a fine grid and a high magnification zoom



Accurately setting the position of the first frame on the master page using the info palette

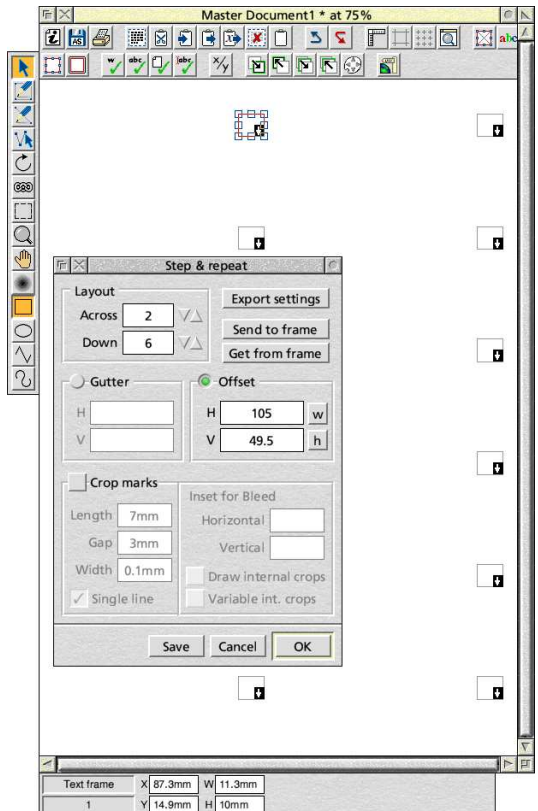
making use of the facilities offered by Ovation Pro proved much easier. The first step was to select the '999' placeholder on the bottom-left ticket in ArtWorks, and find its position on the page using *Objects – Group Info...* from the menu. It was 87.3 mm in from the left, 34.6 mm up from the bottom, and was  $11.3 \times 5.0$  mm in size: with the aid of a calculator, the position on the page for each ticket number could now be worked out easily.

A new document was created in Ovation, and its master page opened for editing with Ctrl-E. It needed to be A4 with no master frame, so the Page guidelines dialogue was opened with *Page – Page guidelines...* and the page size was set. *Default master frame* was unticked, and the changes accepted. It's worth noting that the default master frame is 'auto linked' by default, so trying to delete it by selecting it and using Ctrl-K will not work because Ovation will not delete linked objects. To do it this way, the green auto link must first be removed using the Link tool in the usual manner.

Still working in the master page, a new frame was added with the Frame tool. The exact position was not critical, as this was then set using the position fields in the Info Palette to

match the position of the top-left ticket in ArtWorks. The only thing to watch here is that while ArtWorks measures from the *bottom-left*, Ovation measures from the *top-left*: although the X coordinate, width and height were correct, the Y coordinate needed more work. The location in ArtWorks was 34.6 mm from the base of the page; allowing for an A4 page being 297 mm high and five spaces of 49.5 mm between the tickets, this gives the Y coordinate as  $297 - (34.6 + (5 \times 49.5))$  or 14.9 mm in Ovation.

The ticket numbers themselves will be generated using Ovation's mail merge tools, so the caret was placed in the frame, and a merge tag was inserted using *Misc – Insert – Merge tag...* to open the Mail merge tag dialogue. A field number of '99' was used – this will



Using Step & Repeat to create the 12 numbered frames

actually be defined in a later step. The tag shows up in the frame as the text “[Merge 99]”, and as this won’t fit, all that appears is the overflow arrow – this doesn’t matter.

With the first frame in place and containing a suitable merge tag, the other eleven could be positioned quickly using Gavin Crawford’s Step and Repeat applet: when installed, this allows copies of a frame to be made in a similar way to ArtWorks’ Replicate tool. Selecting the frame and choosing *Applets – Step & repeat* from the menu opens the Step & repeat dialogue. The *Layout* was set to be 2 across and 6 down (to match the ticket sheet layout) and the with *Offset* ticked these were set to 105 horizontally and 49.5 vertically.

Having created the 12 frames, the master page could be closed. The actual document itself now showed the same arrangement of A4 page and 12 frames containing the (unseen) merge tags. The Bodytext style was updated to use 20 pt Trinity Medium on a centred alignment: 20 pt centred was the style used for the placeholder text in ArtWorks, and the font would be set later on.

The final piece of setting up was to create the correct number of pages in the document. At twelve tickets per sheet, 21 sheets are required to produce 250 tickets, so

*Page – Insert page...* was used to add another 20 pages after page 1. This works because the auto-linked frame was deleted from the master page, meaning that Ovation won’t interfere with the insertion (or deletion) of pages.

### Mail merge with a difference

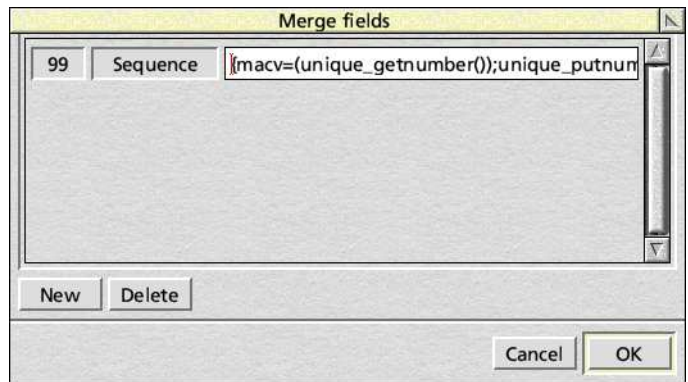
Adding some actual numbers to the pages requires the Unique applet (as supplied with the

Ovation Pro CD) to be installed. The applet provides a facility to generate unique sequences of numbers, and can be used for a range of tasks from ticket printing to adding serial numbers to letters or other correspondence.

With the applet installed, a mail merge field needs to be added to link with the “Merge 99” fields that were inserted into the frames on the master page. The Mail merge dialogue is opened by selecting *File – Mail merge...* and clicking on *Fields...* opens another window to allow special fields to be defined.

Clicking on *New* opens the New field window: the number was entered as ‘99’ (to match the merge field number chosen earlier) and the name as ‘Sequence’. Back in the Merge fields dialogue, this created a new line with a space to enter a definition for the field: example 2 of section 12.7 of the Ovation manual gives a piece of code to use (all on one line):

```
{macv=(unique_getnumber());  
unique_putnumber(itos(stoi(unique_getnumber()+1)));}
```



Defining field 99 as instructed in the Ovation manual

With the merge field set up, the file was saved before moving on to the next stage.

The last bit of the mail merge process involved running the mail merge itself to fill in the numbers. Before that could be done, there was one more bit of housekeeping to do: the Unique applet remembers its number sequence across sessions (to allow it to be used for tasks such as

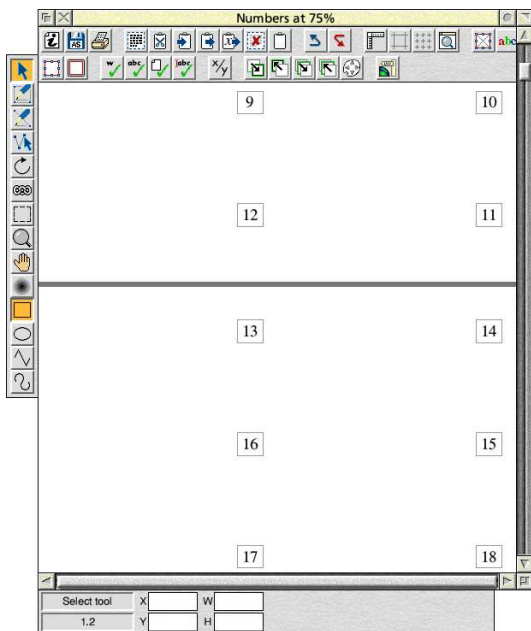
giving serial numbers to letters or other correspondence), so it was necessary to reset this first.

The reset is done via an Ovation Script, so a text file was created in an editor (Edit would do if you don't have a favourite) containing the following lines:

```
void main(void) {  
    unique_putnumber("1");  
}
```

This was saved with a filetype of OvPScript; each time it is double-clicked from a filer window, the unique sequence is reset to start from 1 again.

The merge was now run by returning to the Mail merge dialogue (*File – Mail merge...*) and clicking on *First*, which resulted in the document's frames being filled in with the numbers 1 to 252. These could be printed using the mail merge print tools, but it proved easier to click on *Fix* and then *Cancel* to replace the tags in the document with the numbers – this is



The finished 21 page document containing the ticket numbers from 1 to 252

why saving a copy was important, as there was no going back now!

## Back to Artworks

The numbers in the Ovation document needed to be returned to ArtWorks, and the easiest way to do this seemed to be to use the new PDF import facility. The numbered sheets were printed from Ovation as an A4 PDF using the PS3 drivers and PrintPDF, and the resulting file was imported into ArtWorks. This produced a 21 page document containing the sequential numbers and some other odds and ends.

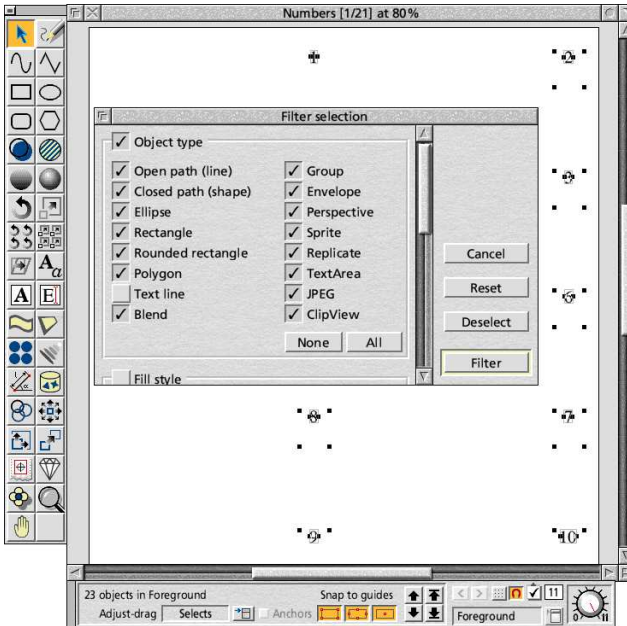
Some tidying up was required to remove the unwanted bits. For each of the 21 pages, everything was selected with Ctrl-A and then filtered on *Object type* with Shift-Ctrl-A so that every object but the text lines containing the numbers remained selected. These unwanted items could then be deleted with Ctrl-X. The process was repeated on each page, after which the resulting ArtWorks file was saved.

The next step was to set the font used by the numbers: again, this was a manual process done page by page. Ctrl-A was used to select the full set on each page, before changing the font in the usual way using the Text tool. The selected text was then converted to shapes using Ctrl-N and all resulting objects were grouped together with Ctrl-G before moving to the next page. Once the font changes were complete, the file was saved again as a new file, so the original can be reused in future years.

## Merge the tickets

The final step in the process was to merge the ticket design with the numbers. In the working copy of the ArtWorks numbers sheets that had just been created, two new master layers were added with the names 'Ticket Design' and 'Crop Marks' – both were set to appear on all pages.

Going back to the single sheet of tickets, the contents of the ticket design layer was selected and copied – the easiest way to do this was to make it the current layer, ensure



With this last detail correct, the '999' was deleted from the Ticket Design layer and the document was saved for one last time.

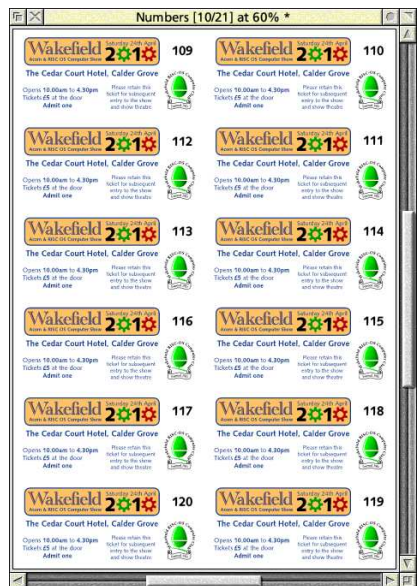
### Spotting stray text

Throughout the process we were careful to ensure that all text was turned into shapes with Ctrl-N: avoiding the problem of missing fonts when the design was printed on another system. A trick to help spot any unconverted text is to use *File – Export – Text* (ensuring that *All pages* is ticked) to save the text from the drawing into a text editor; if the resulting file isn't empty, there is still some real text lurking somewhere in the ArtWorks document.

Tidying up the imported numbers, using the Filter selection dialogue to save having to select the invisible non-text items by hand each time

that multilayer selections were off, and then do Ctrl-A, Ctrl-C. Switching to the Ticket Design layer of the numbered document, it was pasted in place with Shift-Ctrl-V. The same process was repeated to bring the crop marks across, pasting them into the Crop Marks layer instead.

At this point, it was possible to check that the sequential numbers lined up with the placeholder on the bottom-left ticket. Careful measuring had paid off, and (perhaps more by luck than anything else) there seemed to be little scope for improvement as shown below. If this had not been the case, the correction could have been done by going to each page in turn and moving the sequential numbers until they overlaid the placeholder.



One of the finished sheets of tickets

# 120

### Step and Repeat

Gavin Crawford's Step and Repeat applet can be found along with many other useful tools for the discerning Ovation Pro user at [www.crawford-print.co.uk/opro.php](http://www.crawford-print.co.uk/opro.php)

# Ray Favre



Picture: Ian Macfarlane

Just as this issue was ready to go to print, the news of Ray Favre's death was broken by Paul Beverley on the *Archive* mailing list. Following a period of ill-health, he returned to hospital on 24th May and died shortly afterwards.

Ray was the developer behind popular tools such as Calibre and LaBella, and as the maintainer of the DrWimp BASIC libraries he was instrumental in helping many other software developers get started. In print, Ray's two books on BASIC programming had raised over £3000 for charity at the last count.

I corresponded with Ray on many occasions while wearing my 'Archive PD Column' hat, and invariably found him knowledgeable, courteous and helpful. My main memory of him in person was at the 2005 Wakefield Show: as one of those present when the stands finally arrived on the Friday evening following a truck breakdown, Ray rolled up his sleeves and helped us unload them while others several years his junior wisely stood and watched.

As Paul observed in his post, Ray's passing is a sad loss to the Acorn family – he, along with his expertise and help, will be greatly missed.

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*The deadline for contributions to the July issue of the newsletter will be 30th June 2010.*

*Disclaimer: The Editor and committee of the Wakefield RISC OS Computer Club are not responsible for the contents of any article, letter or e-mail contained within this newsletter. All views expressed are those of the individual concerned, and do not indicate that WROCC, the Editor or the committee agree with any statements made.*

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## Newsletter

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## Subscriptions

*50% off the annual subs in first year:*

Full Membership	£12 per year
Family Membership	£24 per year
Junior Membership (under 18)	£6 per year
Visitors	£2 per meeting

## Monthly Meetings

West Yorkshire Sports & Social Club  
Sandall Hall Close, Sandall  
WAKEFIELD WF2 6ER

7:45 p.m. on the first Wednesday in each month

## Correspondence Address

Wakefield RISC OS Computer Club  
3 Riverdale Avenue, Stanley  
WAKEFIELD WF3 4LF

Member of the **British Association of Computer Clubs** and the **Association of Acorn User Groups**