

Gerald's Column *by Gerald Fitton*

I am still receiving many letters which relate to my philosophical comments rather than topics more appropriate for a computer magazine. Possibly this is more a reflection on the high quality of the readership of Archive rather than the quality of my remarks. Paul has received at least one letter praising his magazine for including my philosophical comments. I was quite flattered when he sent me a copy.

This month I shall spend much of my column showing how I created a Fireworkz template suitable for a questionnaire but first. . .

Statistics

Let me reply publicly to one letter (actually an e-mail sent to Paul and forwarded to me) from Matthew Astley. Matthew's letter, like so many I am receiving at the moment, has more to do with philosophy than computers – but this one does impinge on spreadsheets through the discipline of statistics.

The Outcome of many Events is uncertain and so we resort to estimating the probability that the Statistic will take particular values. For example we might say that the probability of a baby being a boy is 50% (actually it's nearer 53%).

Allow me to complicate this example. Mum has an amniocentesis test. The Gynaecologist knows the result of the test but Mum doesn't. The Gynaecologist now reckons that he can predict the sex of the baby with 90% accuracy whereas Mum 'knows' that the probability of a boy is still only 53%! Suppose you were 'all knowing', you would have a 100% probability of predicting the sex of the baby. Who is right about the probabilities?

The answer is: "All are right!" There is no such thing as an absolute value for a probability. The value you give to a probability depends on the extent of your knowledge. I shall give you a concrete example of this to work out later – but, for the moment at least, let me return to Matthew's e-mail. In an earlier article about recursively defined functions I referred to, and tried to explain, the paradox of the Uncaused Cause. Matthew suggests that quantum mechanics abounds with "uncaused causes, such as nuclear decay, which can be predicted only statistically". He continues, "there is no 'working model of the universe' in which these causal exceptions fit neatly, unlike the gamma function..." (to which I referred in my article). I suggest that Matthew's concept of statistics needs refinement. In the eyes of many scientists what is needed here is more knowledge of the way the universe works so that the probabilities can be reduced to a certainty of when the nucleus will decay. The problem with our current 'working model of the universe' is that we don't have enough knowledge – but, perhaps, one day we will have! When that day comes (give or take an uncertainty principle or two) we'll be able to predict nuclear decay with certainty.

The Value of Imperfect Information

The following is part of an assignment which I set my "Decision Making" students last year. I recommend using a spreadsheet to calculate the answer but you can do it with a sort of decision tree if you don't like spreadsheets. I include it as part of this month's article

(but without solution) so that those of you willing to study the concept of relative (rather than absolute) probabilities will come to understand that even imperfect knowledge is financially valuable and this is because it does change probabilities (but not the absolute facts). There is a concept used by those in this branch of mathematics which (without wishing to sound blasphemous) is called 'The value of a hot line to God'. Less blasphemously it is expressed as 'The Value of Perfect Information'. When reading through the example below remember that God does know, right from the beginning, whether there is oil in the property under consideration. Us lowly mortals can never be sure of anything (unless we have Faith – but that's another story) in the way God can!

The Western Standard Petroleum Company (WSPC) is a newly established small oil company. At present it is considering purchasing a plot of land where its preliminary survey indicates that there is a 60% chance of finding oil worth £1M. It has an option to buy the land for £0.3M and drill at a cost of £0.2M.

As an alternative WSPC could commission a survey from the well established and reputable Eastern Oil Survey Company (EOSC) without first buying the land. If the survey indicates that oil is present then WSPC will buy the land for £0.3M and drill at a cost of £0.2M (spending £0.5M).

Based on experience, such surveys by EOSC are correct 90% of the time. Calculate the maximum value to WSPC of an EOSC survey which is correct 90% of the time.

Suppose that EOSC offer to do the survey for £0.1M. On the basis of Expected Value alone should WSPC ask EOSC to conduct the survey or not?

Assume now that WSPC are willing to accept the loss of the cost of the survey, £0.1M, if the survey indicates that oil is not present. However, WSPC are not willing to accept liability for the cost of buying the land and drilling, £0.5M, if the EOSC survey indicates incorrectly that there is oil. WSPC asks EOSC to indemnify them against an incorrect indication that there is oil present when there isn't. EOSC agree to take this risk 'in house' at an extra charge. What is the minimum extra charge which EOSC should make for indemnifying WSPC against their extra loss (over and above the £0.1 for the survey) if no oil is found? Work this out on the basis that EOSC do not wish to do other than break even in the long term on their 'in house' insurance business.

EOSC decide to charge this minimum amount. On the basis of Expected Values alone should WSPC commission the survey and pay the extra charge?

Does this insurance arrangement change the Expected Value of the project to WSPC? If not then what has changed?

As a by-the-way may I quote Gerald's first Law of gambling: "Never bet on certainties". I have an interesting anecdote underlining this Law which dates back to the time when my wise old Physics Master insisted that I bet a tanner (six old pence) against him on the outcome of an experiment that I was certain of (I'd seen the experiment before). When he won (the conditions were slightly different but I didn't know that) he refused to take my tanner on the grounds that he "Never took his winnings when he was betting on a certainty".

PipeDream 4.5

Many PipeDream users have now received their StrongArm card. It is causing a lot of consternation. Typical of the correspondence I have received is a fax from a Director of Lewin of St. Albans Ltd (Watford). David reports that his current version of PipeDream, Version 4.13, doesn't work with StrongArm. He says, "I can no longer access 99% of my business files". The good news is that version 4.5 does work with StrongArm and, by the time you read this, it will be available direct from Colton Software.

Fireworkz and Fireworkz Pro 1.30

This is the StrongArm version of Fireworkz. If you have an earlier version then you can upgrade for £29 + VAT but only directly from Colton Software.

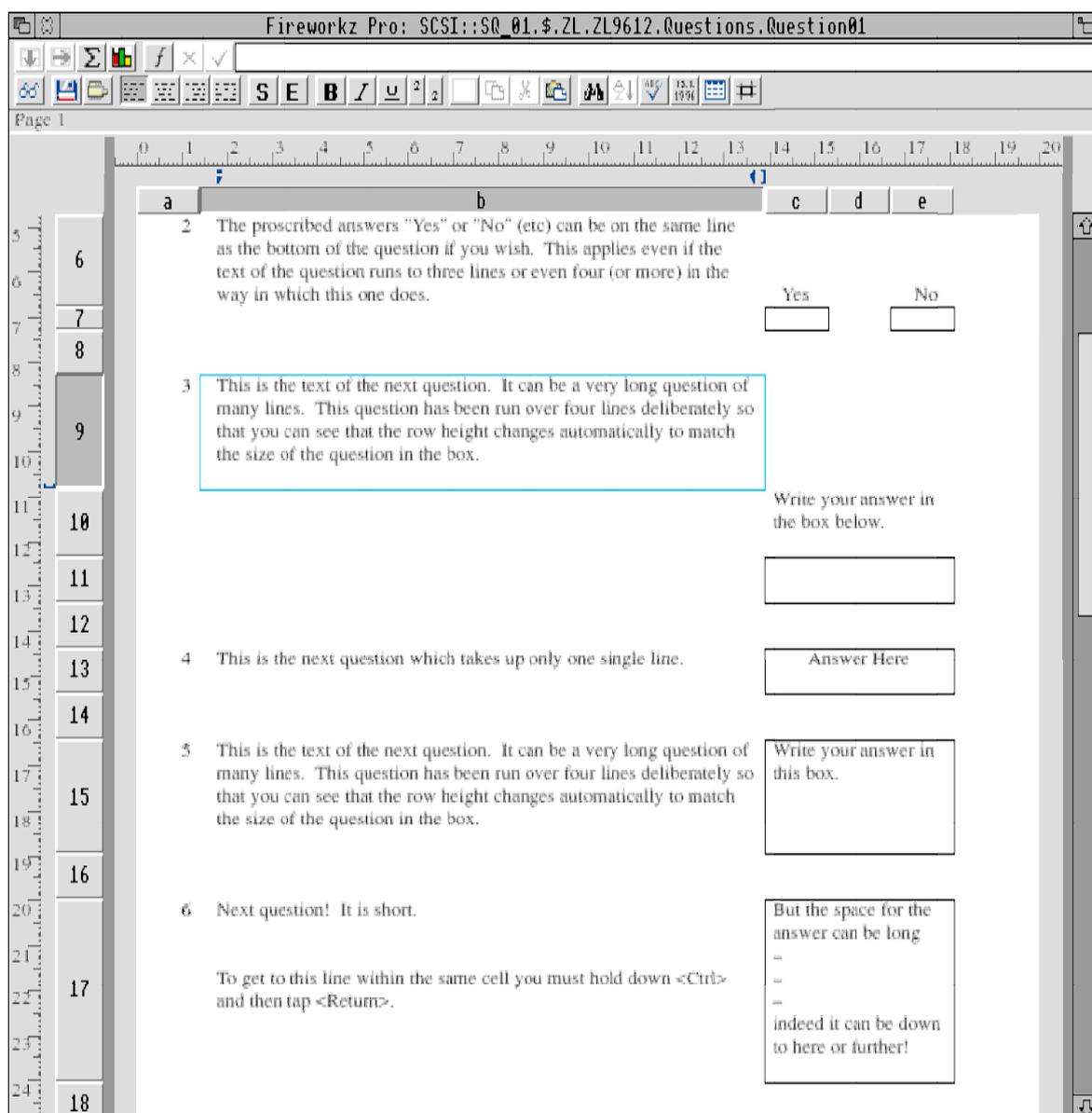
A Questionnaire

It was a Thursday evening. I had seen the first half of the Perry Mason classic before but I'd missed the denouement on the previous occasion and I was determined that I would see the ending this time so I set the answerphone to ON. Unfortunately Jill just happened to be by the 'phone at ten to nine, just before the end, when it rang. She picked up the 'phone. The call was from someone who had just bought an Archimedes and Fireworkz and wanted to use it to write a questionnaire. After a few minutes discussion it was quite obvious to me that the caller was a complete novice (he didn't read Archive and was unfamiliar with computers) and that his problem would be solved in the simplest manner by me sending him a suitable Fireworkz template complete with Styles and instructions.

I suggested that he sent me a handwritten sheet with typical questions and showing space or Yes/No boxes where appropriate for the type of answer he wanted. He persisted for the best part of an hour suggesting that I go to the Wye valley and show him how to set up the questionnaire – I couldn't afford the time. I should have rung off when he started to drop the names of 'important people' in the education business who were backing his project. Instead I stuck to my request that he send me a hand written version of part of his questionnaire. I said that I'd get at worst on Saturday and that I'd get a disc back to him with a suitable template, etc, in his Monday post.

I'd missed the end of Perry Mason. I decided to get started on the questionnaire so that, when his letter arrived, I could be sure of getting the answer in the Saturday post. You've guessed it! His letter never arrived! That was three weeks ago and it still hasn't come.

Anyway, the screenshot below shows the document I produced. It, and all other related files can be found on the Archive monthly disc.



Styles or Effects

Generally I much prefer the use of Styles rather than Effects. The successful creation of a layout for a questionnaire depends upon the creation of a suitable set of Styles. I added five new Styles (and later two more) to the ones I usually use; these extra Styles make the creation of questionnaires relatively painless.

The file [Question01]

If you have the monthly disc then load the file [Question01]. When the example document has loaded click on the Styles button (the S button which is the eighth from the left on the second button bar) and you will see the seven new Styles of which five important ones are as follows: – ZL Box Off – ZL Box On – ZL Current Cell – ZL Question No – ZL Yes/No. These are shown in the screenshot below. I shall describe each of them in turn but not in the same order as given above.



ZLBase

This is not one of my new Styles but the usual ZLBase slightly modified. The change can be seen in the Ruler – Justify sub menu. In the screenshot below you will see that the I have selected justify left rather than the fully justify which I normally use.

I believe that left justification is more pleasing to the eye than full justification when the line length is short. I have described this effect in an earlier article about Styles.

It is this Style which is used for the text in column b. There is no need to apply this Style to column b since, as the default Style, it will be applied unless an alternative Style is laid over the top of it.

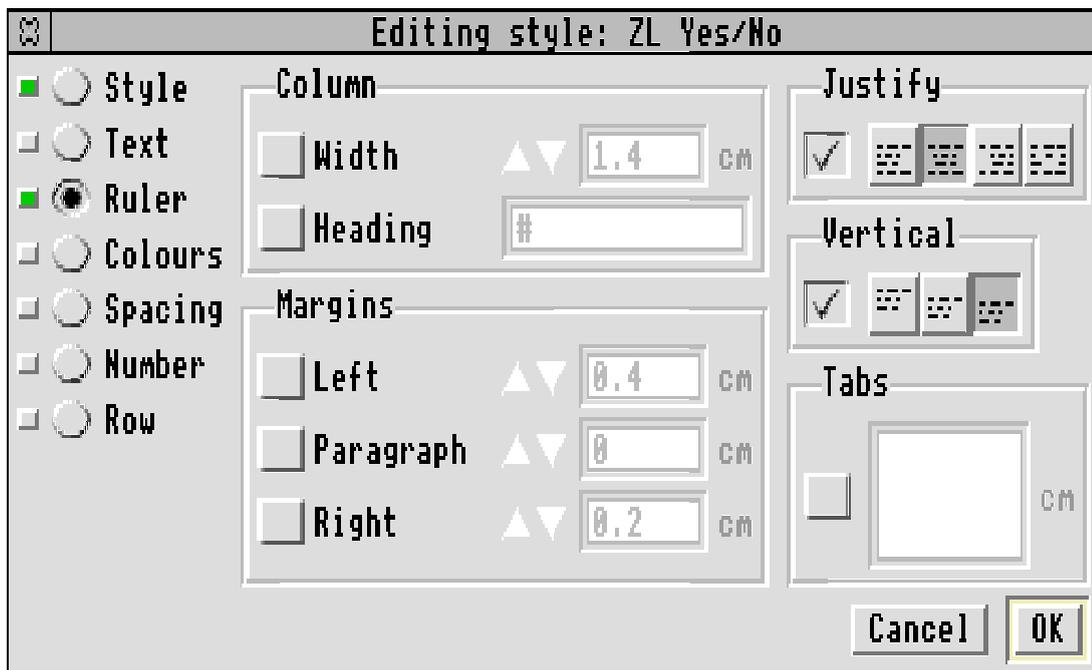


ZL Question No

This Style is applied to the whole of column 'a' overlaying the base Style. Its only attribute is in the Ruler – Justify sub menu where I have chosen to justify right. This ensures that the question numbers will be aligned at the right hand end of column 'a'.

ZL Yes/No

This Style is used on the “Yes” and “No” text which appears (for example) in cells c6 and e6.

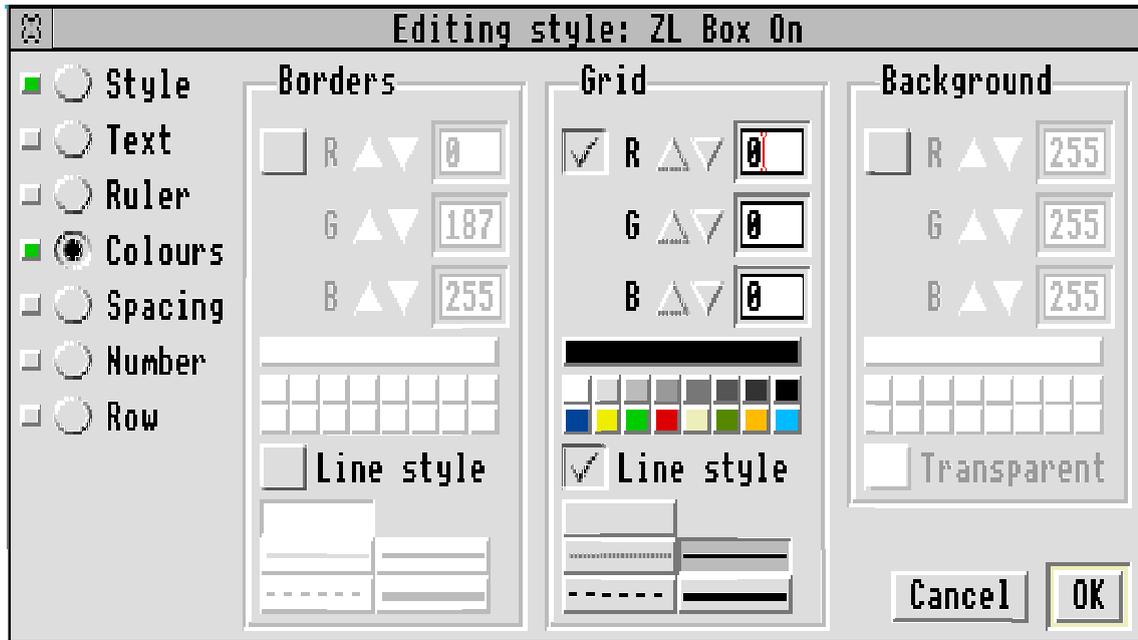


Have a look at the screenshot above and you'll find that I have used the Ruler – Vertical sub menu to justify at the bottom of the cell. This will ensure that, in cells such as c6 and e6, the “Yes” and “No” text will appear at the same level as the last line of the text in column b.

Through the Ruler – Justify sub menu I have justified the “Yes” and “No” text centrally.

ZL Box On and ZL Box Off

This Style ZL Box On has been applied (for example) to cells c4 and e4. It creates the tick boxes filled in by the questionnaire's respondent. If you want to remove the box then you can do so by applying the ZL Box Off Style.



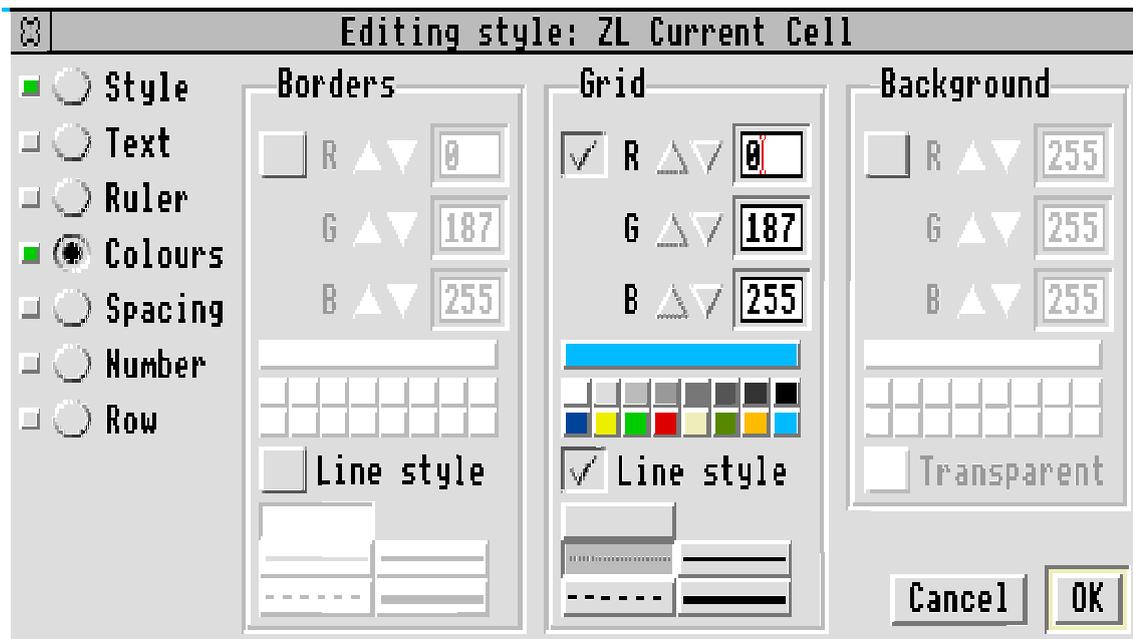
The only attribute of the ZL Box On Style is selected through the Colour – Grid sub menu. You will see that the grid has been turned On, that the line is black and of medium width. you might prefer the thinner line (to the left of the selected line thickness). If so then change this Style and all the boxes in the questionnaire will change simultaneously. You won't have to go through them all one at a time as you would if you'd used Effects.

The Style ZL Box Off is similar – but a zero thickness line is used!

ZL Current Cell

This Style highlights the cell containing the cursor. Fireworkz has a built in facility called StyleCurrent which allows you to specify which of your available Styles is used within the cell containing the cursor. I have specified that StyleCurrent shall be ZL Current Cell.

If you look at the screenshot below you'll find that I have chosen a light blue thin line for the box surrounding the current cell. The default supplied by Colton Software for this Style is a black line which is sometimes mistaken for the ZL Box On Style! I get correspondence asking why boxes sometimes disappear when the cursor is taken out of the box! Using a different colour for the current cell box allows you to distinguish between the current cell box and the ZL Box On Style.



Merging Cells

Of course, the five Styles on their own don't give you everything you want.

If you have the file on the monthly disc and place the cursor in cell d9, you'll see that the column (top) border shows all five columns having the letters a – e (at the top).

Tap the down arrow key and the cursor moves down a row. You'll see that the cursor (and the current cell) is not d10 but c10! Now look at the column border (at the top) and you'll see that the top border now shows only three columns, a – c. Even more important you'll see that the width of the cell c10 is wider than usual, indeed it is the width of c, d and e (of row 90 put together). You may wonder how to achieve this—I don't think that it is in the User Guide.

Before I 'widened' c10 I did have a c10, d10 and e10. I dragged the cursor from c10 to e10 so that the three blocks appeared in inverse video. Then, using the <adjust> (right hand) button of the mouse, I double clicked on the right hand end of the c column at the column (top) border. This operation merges the three marked cells into one.

ZL Cell Width 1_4 and ZL Cell Width 4_2

These are two Styles I added at a late stage because I realised that it might be necessary to reverse the process of merging the c, d and e cells in a particular row.

To 'demerge' a 4.2 cm wide c cell firstly you have to mark the cell and then apply the ZL Cell Width 1_4 Style to it. This will cause the c cell to become 1.4 cm wide. Next, make sure that the cell is still marked and, at the column border (ie at the top of the column), drag the right margin of the c column. The column headings e and d will appear. Mark the three cells c, d and e, and then (only if the cells are still marked) apply the Style ZL Cell Width 1_4.

The mistake which you might make is that you don't mark the cell (or cells) when you drag the top border. In that case the whole column of (say the c column) will change in width. What a mess you'll have to unravel! To be on the safe side I suggest that you Save first!

ZL Together

I have applied this Style to pairs of adjacent rows (such as rows 6 and 7) where I need to narrow the gap between the end of the text (eg the "Yes" at the bottom of C6) and the box below it (the box in c7). The technique is to mark the two rows (drag from the 6 to the 7 in the row (left) margin and the whole of these two rows will be marked in inverse video.

The two rows 3 and 4 have had ZL Together applied to them also.

Summary

Create a suitable set of Styles and apply them to the document. Don't use Effects or you will get in a mess which will take ages to unravel—if you can do it at all!

If you don't take the Archive monthly disc (shame on you) but you do want this set of Styles in the form of a template and example (as shown above) then please send me a 800 Kb formatted disc and return postage and I'll send the files off to you. On the other hand if you have any suggestions or you want something like this but slightly different and can't get Fireworkz to produce what you want then send me (on a disc please) you're efforts and an explanation (on paper) of what you want to do. I'll do what I can and send your disc back to you with my shot at a solution.

Finally

(a) Please send a disc, self addressed label and return postage if you want a problem solved; (b) My address is that of Abacus Training (see back inside cover); (c) Many thanks for all your letters.