



**AUSTRALIAN TECHNICAL  
ANALYSTS ASSOCIATION INC.**

## **Newsletter**

**March 1995**

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Contributing to the ATAA Newsletter is encouraged and will repay your effort by expanding and sharpening your analytical ability. The emphasis of the Newsletter is on original articles, although consideration may be given to material of interest previously published in other publications. Newsletters are published each January, March, May, July, September and November. The deadline for copy is the last day of the previous month: ie December, February, April, June, August and October.

If you would like to discuss how you could contribute, telephone Roger Lawes on 02 375 6536. Contributions should be addressed to Roger and sent to him at GPO Box N255 Grosvenor Place Sydney NSW 2000. Our preference is that you submit articles in both hard copy and on IBM disk. Software packages preferred are Microsoft compatible, Word and WordPerfect 5.1. However, most packages will generate an ASCII file, which will be fine.

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### Welcome to New Members

Alex Buttner QLD	Ross Bond QLD
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Fiona Rankin NSW	Ronald Peek WA

## The Poor Man's Coppock Indicator

By Colin Nicholson

Members who have heard some of Dawn Bolton-Smith's presentations to the Association or who subscribe to Trendex will be familiar with the Coppock Indicator. It is not easy to calculate and is not built into some charting software, or only with limitations, so members might be interested in an easier way to do the same thing.

The Coppock Indicator was invented by an investment adviser (the founder of the US Trendex) Edwin Coppock. It was outlined in detail in his late 1960's report "Realistic Stock Market Speculation", which was only ever available to those who attended his courses and is virtually unprocurable today. It was designed for stock market indexes only and Coppock only ever claimed for it that it gave relatively risk free buying points for the Dow Jones Industrial Average. It was not tested on any other market and no claims were made for its validity elsewhere. It must be emphasised that Coppock never claimed that it would give a sell signal and suggested other techniques for that purpose.

The original formula was a multi column affair that was far from easy to calculate in the pre computer age. Harold Wincott and Hugh McDougall simplified it for readers of the UK Investors Chronicle, but even so, there are sixteen columns in the spreadsheet! In simple terms, the Coppock Indicator is calculated by these steps:

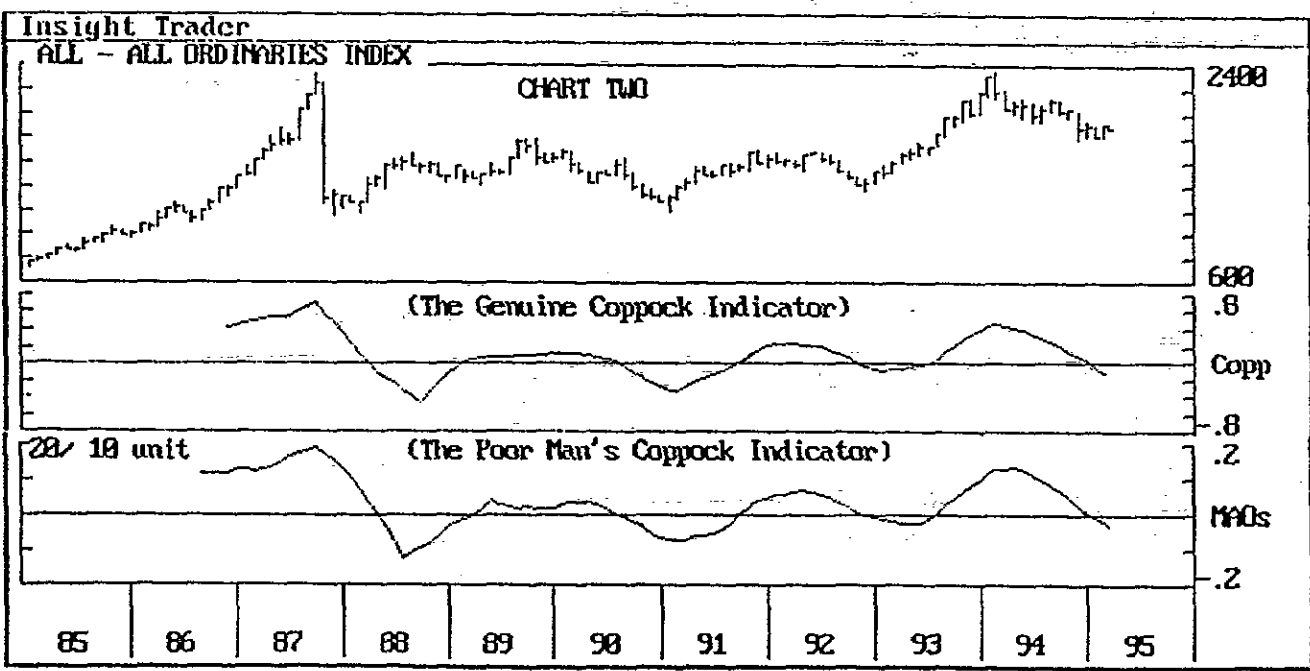
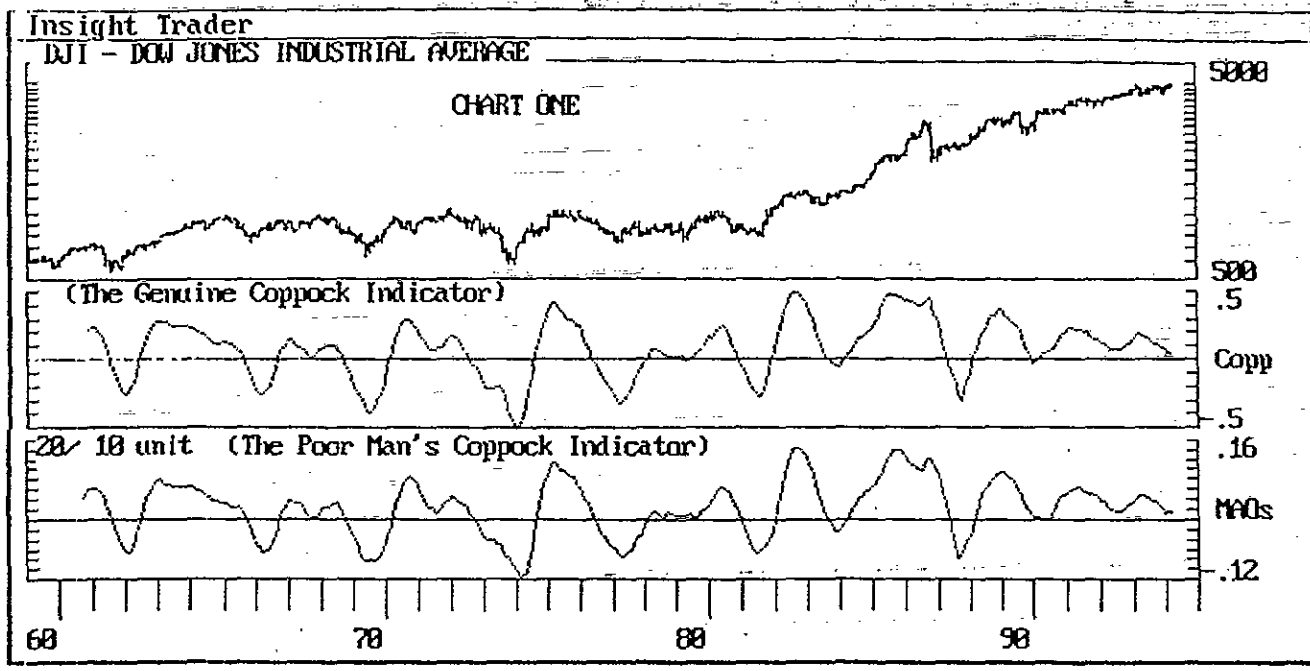
- \* Calculate a 14 month Rate of Change
- \* Calculate an 11 month Rate of Change
- \* Add the ROC(14) and the ROC(11)
- \* Calculate a 10 month Weighted Moving Average of ROC(14)+ROC(11)

The formula to do it in Metastock is:

`MOV(roc(CLOSE,14,%) + roc(Close,11,%),10,WEIGHTED)`

If you are still with me, do not despair. There is an easier way. With some experimentation, I have found that an almost identical result can be obtained much more simply.

What I have done is to take a 20 Month Simple Moving Average and subtract a 10 Month Simple Moving Average. This is not a very difficult calculation to make by hand, or on a spreadsheet. The resulting oscillator is very similar to the Coppock Indicator. I have called this the Poor Man's Coppock Indicator. Chart One shows the Coppock Indicator and the Poor Man's Coppock Indicator for the Dow Jones Industrial Average, the Index for which Edwin Coppock designed it. Chart Two shows the two indicators for the Australian All Ordinaries Index. You can see the similarities. I have tried it on other indexes with similar results.



## New Video Tapes

How long is it since you checked out the list of videos in the video tape library. We have recently added to the list, which has grown to twenty four separate tapes. There are multiple copies of some tapes, which has speeded up the waiting time. The more recent additions are described below:

### **Martin Pring on Market Momentum**

These three tapes are for those who have read the basic text books and want to go one step further in the analysis of markets. Beginners should study the Elder tapes or the Pring Technical Analysis tapes first.

The tapes are a video presentation of his book of the same name. Martin is an excellent presenter and makes his point very clearly. The tapes are longer than the original Elder tapes and of a much better production quality.

Martin uses the term "Momentum" to cover a range of indicators that measure the health of price action. These include Moving Averages, RSI, MACD, Stochastic, Directional Movement, Parabolic and the Herrick Payoff Index. All of these indicators are dealt with on the tapes.

I found these tapes very informative and they made parts of the book more accessible for me. They are a "must see" for serious technical analysts.

### **Thomas Berovic Synergetic Technical Analysis**

Do not be put off by this very American title. These three tapes are excellent. They are so good that I bought a copy for myself to study further. I can't wait for Thomas to write a book!

Again, these tapes are not for beginners - study the Elder and Pring Technical Analysis tapes before attempting these. Each tape is about an hour long and very good production quality. Thomas is a very experienced presenter and you never lose the sensation that there is long practical experience behind his words.

Thomas sets out with his "Synergetic" approach to tackle the problem that most indicators give false signals two out of three times. He claims that the approach filters out one of the bad signals, so that the odds are dramatically improved in favour of the analyst. To use his words: "You will learn how to integrate trend-following indicators with oscillators to create low risk/high reward trading systems." As a bonus, he throws in material on professional stop placement, money management and trading psychology.

### **Steve Brise The Inside Track to Winning**

This is our latest addition to the library. It is actually two tapes and is the best parts of a full day presentation for Financial Trading Seminars. As with the Elder tapes, the production leaves something to be desired. However, this is compensated for by a very clear exposition of the material which is the basis for Steve's calls through his own Newsletter.

The tape is really only for Futures market analysts and traders. It deals exclusively with Steve's use of the Commitment of Traders reports that break down Open Interest on US futures markets into "Commercials" or hedgers, "Non Commercials" or Large Speculators/hedge funds and "Non Reportable Positions" or the smaller speculators/hedgers/public. Even though I do not trade the Futures markets, I found some of his discussion very stimulating as far as his insights into motivations and market psychology are concerned. These comments by Colin Nicholson. March 1995.

## Hunting The Hidden Cycles of The Share Market

By Peter Webster

A very widely read book of the nineteen seventies was Robert Pirsig's "Zen and the Art of Motorcycle Maintenance". In it Mr Pirsig discussed, among other things, the approach to life of two types of people. The type who likes to ride motorcycles without delving into the machine's inner workings and those who prefer to tinker with the engine and learn as much as they can about how the various mechanical components work. In this presentation I would like to take the latter approach and poke about in that well known time series, the ASX All Ordinaries Index.

Chartists seek to see the future of the market and one way of doing this is by extrapolation. That is the use of some method of finding from a series of numbers an approximation of what the series will look like in the future. What would be nice is to find some periodic cycles lurking beneath a chart of the series which interests us. Are there really four year, eight year and fifty year cycles? Unfortunately, these cycles, if they exist, seem most reluctant to rear up from the charts and identify themselves.

Try looking at graph of the log of the All Ords going back to January 1875 and see what you can get out of that in the way of cycles (See Fig.1). The good news is that in the last hundred and twenty years there have been plenty of cycles to buy at the bottom of and sell at the top of. The bad news is that the cycles do not seem to be periodic. That is the cycles we can see do not repeat themselves at regular time intervals.

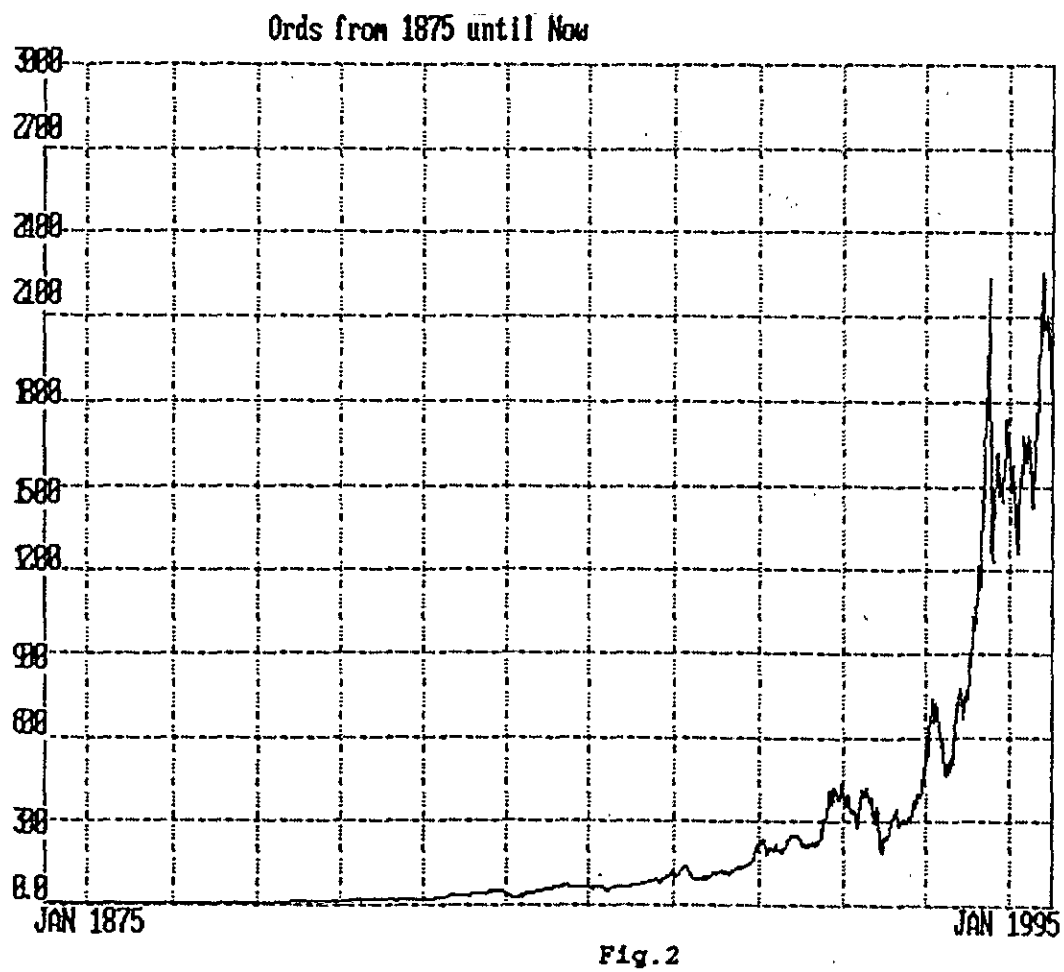
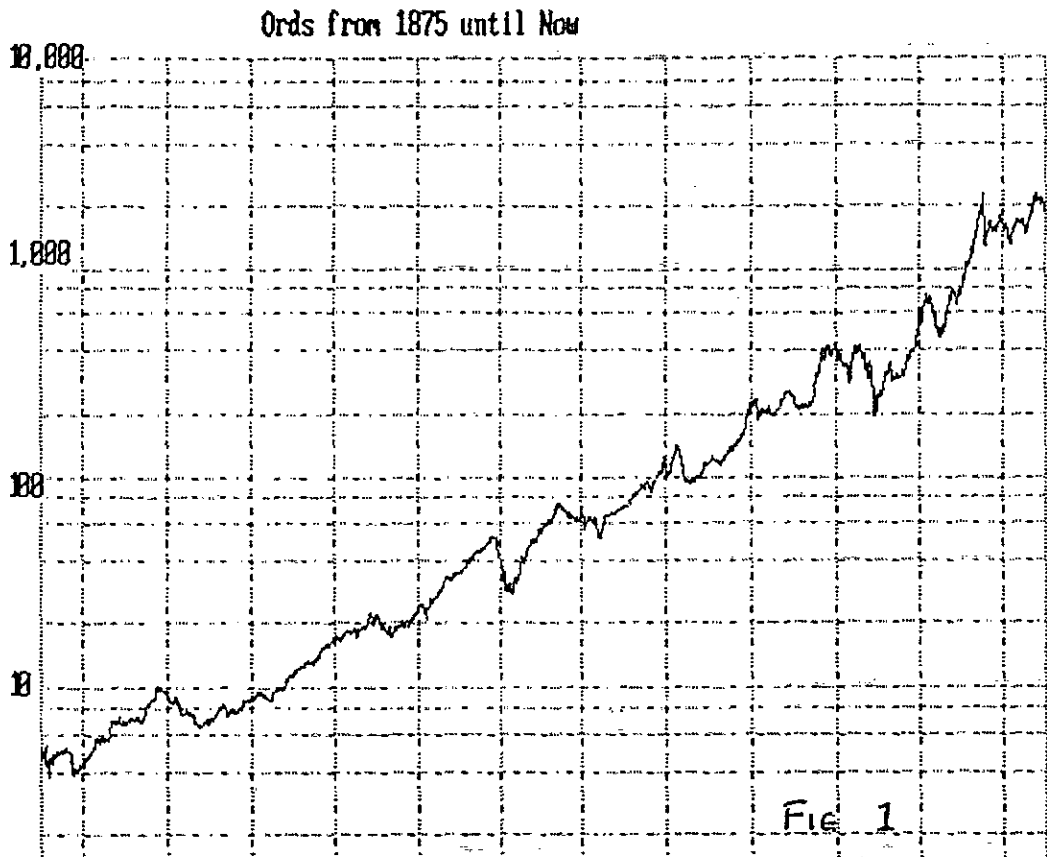
Robert Pirsig called the people who are interest in the workings of things the Classical Type and those who preferred to take the black box approach the Romantic Type. Since we are adopting the Classical approach in this presentation, lets take a closer look at the All Ords Index in Fig.1.

Firstly this is what is called a time domain graph which is fair enough since we have plotted time along the horizontal axis otherwise known as the x-axis or abscissa. We have plotted the log of All Ords Index on the vertical axis with a value being plotted for each month. The vertical axis is also known as the y-axis or ordinate. Why do we take the log of the Index? If we didn't the graph would look like Fig.2! It certainly looks dramatic but it is probably not just what we always wanted when it comes to cycle finding.

Since no periodic cycles seem to have leaped off the page and hit us in the eye, we should look around for a way the take the graph apart (in true Classical style) and see if we can't find hidden component cycles.

Fortunately for us, in about 1820, one of the World's greatest and most famous mathematicians devised a method of pulling complicated waveforms apart. He was Baron de Jean Batiste Joseph Fourier who lived from 1768 until 1830. Baron de Fourier discovered that any waveform can be described as the sum of a number of sine waves. These component sine waves have various amplitudes, wave lengths and phases. That is their height, frequency and relative starting points may differ. If you take all these component sine waves and add them together you get back the original waveform. In our case why not use Fourier Analysis to analyse the All Ords series into its component sine waves, in fact that is just what we will do.

Having calculated a list of numbers which describe the component sine waves which comprise the All Ords Index we should be able to plot a graph which will help us distinguish the most important ones. That is we could look at the graph and identify if there really are major cycles which could help us predict what the index might do in the future. Such a graph is called a frequency domain





graph.

Here I should point out that the component sine waves are by definition periodic. That's a bit of good news. The other side of the coin is that if we could analyse the All Ords again in another hundred years time we might, and probably would, end up with a completely different set of sine waves. However, maybe, just maybe some of the major underlying cycles might be the same. What I am saying is that it could be possible that four year or an eight year cycles might always be present.

Very briefly, the Fourier Transform is a technique by which a waveform in the time domain, which is what we have in Fig.1, is transformed to the frequency domain. Let me explain. Right now we have a long list of numbers which represent the All Ords index each month for the last one hundred and twenty years or so. We have plotted these on a graph with time along the x-axis. What we seek to do is derive a list of numbers from which we can plot a graph where the x-axis will be frequency instead of time. I will explain as we go along. For the moment if you would just accept that this is what we want to do and we need to find a way of doing it.

Baron de Fourier left us the mathematical formula for performing the transform from the time domain to the frequency domain but it requires some integral calculus which in turn requires a vast number of calculations. If you have a large number of points plotted on your graph, it could take hours or even days to do the calculations even using a fast personal computer. What to do?

As it turns out, in the nineteen forties, two mathematicians, Doctors Danielson and Lanczos, discovered what is known as the Fast Fourier Transform, commonly known as FFT, and this solves one of our problems. The other is how to find a computer program which will implement the FFT algorithm. After some searching I found the answer to problem number two in a book called 'Numerical Recipes in C' by William Press and others. "C" in this case refers to the C computer language which is widely used for the writing programs for PCs, rather than a musical key.

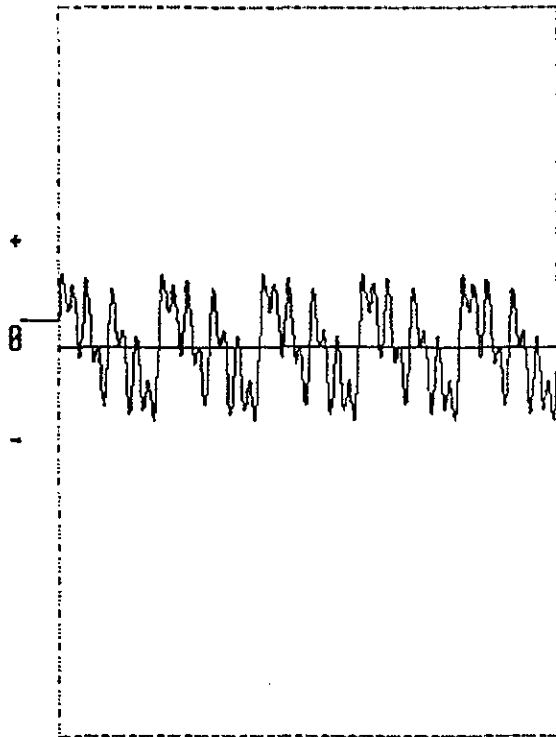
So now we are starting to get somewhere but there is yet another problem for us to overcome. When you do a calculation it's nice to be able to look at the answer and say, "Yes, that looks right" or "Uh oh". In our case we have no idea what the answer should look like so the it-looks-right-test won't work for us. To solve this problem I decided to write a short program which would make waveforms from sinusoidal waves (by this I mean sine waves of various amplitudes, wave lengths and phases) of my own choosing. I could then use these manufactured waveforms to test the FFT program. Let me explain. The object of the game is to input a time series like the All Ords and get out some sort of list which describes all the sinusoidal waves which are its components. The sinusoidal waves will be periodic by definition and the hope is that there will be some nice big ones which we could extrapolate into the future. The sinusoidal waves will all have various frequencies, amplitudes and phases. Hence, to test the FFT program we could make an artificial time series out of various sinusoidal waves which we know all about. We could then input our artificial time series into the FFT program and if the program works properly it will give us back the correct information about the components which we used as the input.

Fig.3 shows an artificial time series made up of four sinusoidal waves. All have the same amplitude (that is the 'loudness') and the same phase (they all start at same point on the x-axis) but they all have different wave lengths and hence they have a different number of cycles in length of the sample time series. The number of cycles were 5, 10, 20 and 40.

Now remember that Fig. 3 is a graph of a time series and is a time domain graph. What we are trying to do is to recover information about the underlying periodic waves.

After I ran the time series from Fig.3 through the FFT program it plotted the frequency domain diagram shown in Fig.4. As you can see, it faithfully drew spikes at 5, 10, 20 and 40. Hows that for a good start! It worked!

Semi-log plot of Test data of 512 data points  
Last 512 Data Points  
Less Monotonic Component

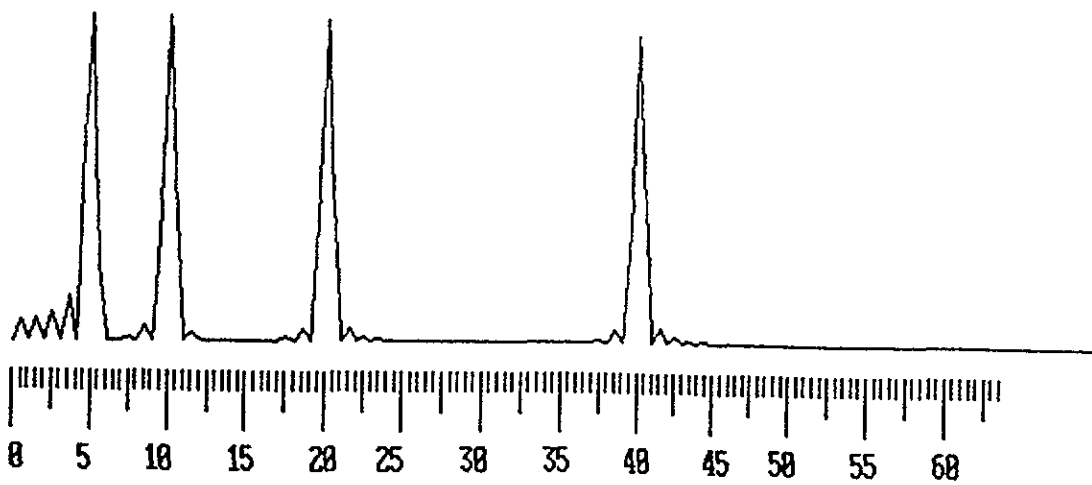


From date

Fig. 3

To date

Power Spectrum of Test data of 512 data points  
Number of Points Used is 512



Number of cycles in Data Points Sampled

Fig. 4

Any significant sine waves associated with the All Ords graph would probably be buried in all sorts of random noise so with this in mind I decided to add some noise to my test waveform. Fig.5 shows the graph of random numbers (well sort of random) generated by a computer program. I say "sort of random" because, for one thing, the numbers are confined between zero and an upper limit. Whilst these are not strictly random numbers they are suitable for burying our test sine waves. Fig.6 shows the fourier analysis of the random noise without the test sine waves. It looks more or less as I would expect it to except that there are some very large spikes at the extreme left of the graph which I would take to indicate a sine wave of infinite wave length or possibly spurious data due to sampling problems. In any case it is part of the noise.

When I added four sine waves to the mixture the resultant waveform looked suitably jumbled up. Please see Fig.7. However when I ran the whole thing through the FFT program, the result clearly identified the correct wave lengths of the sine waves. These appear as the four spikes sticking up out of the noise in Fig.8.

The program worked but we must bear in mind that if we had input frequencies that were much higher, we would have run into trouble because of a fly-in-the-ointment called the Nyquist Critical Frequency. This may also have be the problem with the FFT of the random noise.

Here is a puzzle. We were looking for sine waves and we ended up with spikes! The answer to this is that the spikes in Fig.8 are just a method of identifying the relative power and wave length of the sine waves which comprised the original waveform. They are generated from the list of numbers which the FFT program produces as its output. If we want to draw the sine waves which are represented by the spikes we need to go back to this list of numbers. These numbers are called 'complex numbers' and they give us all the information we need to re-create sine waves. Their position in the list gives us the wave length and the numbers themselves give us the phase and amplitude.

The artificial time series in Fig.7, is extremely simple compared with a series such as a share market index. Even so it would be quite difficult or perhaps impossible to identify the sinusoidal waves buried in the graph just by looking at it.

We can now apply the FFT program to the time series of the All Ords from January 1875 until December 1994. At last!

To analyse the All Ords I decided to get rid of the long term trend and concentrate on the cyclic nature of the time series.

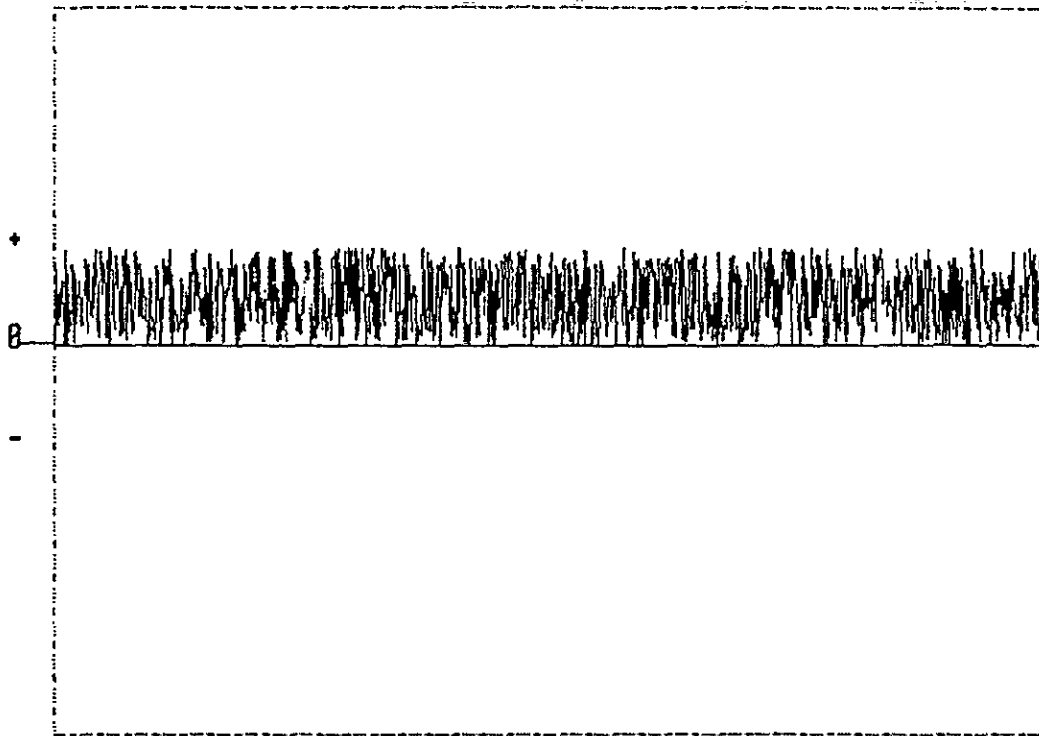
By the long term trend, I mean the upward slop of the All Ords which has been persisting for the last one hundred and twenty years or so. See fig. 9. If we wanted to lapse into jargon we could call this the monotonic component of the data. I calculated the linear regression line for the series and this is the straight line you see plotted through the chart. I then subtracted this line from the series itself and the result is shown in Fig.10.

Hang on! We lost something! Our series used to start at January 1875. Now it starts at November 1909. The reason for this is the program had to lop off 417 of the 1441 data points so as to leave a series in which the number of points is a power of two. In this case it is 1024 but we could have used 512 or padded the series out with zeros to 2048.

You probably won't believe it but we are finally there. We can try the FFT program out on the All Ords. The frequency domain diagram of the result is shown in Fig.11. This, for the record is call the 'Power Spectrum' of the series. It is very dangerous to make wild assumptions but here goes anyway. The big spike on the extreme left is probably part of the random component of the series or it could be a problem due to the Nyquist Critical Frequency which is outside the scope of this presentation. In any case it is probably best discarded.

The power spectrum also shows well defined spikes at frequencies which indicate sine waves with wave lengths of 19,11.4, 8.5, 7.1, 5.9 and

Semi-log plot of test data of 1024 data points  
Last 1024 Data Points  
Less Monotonic Component

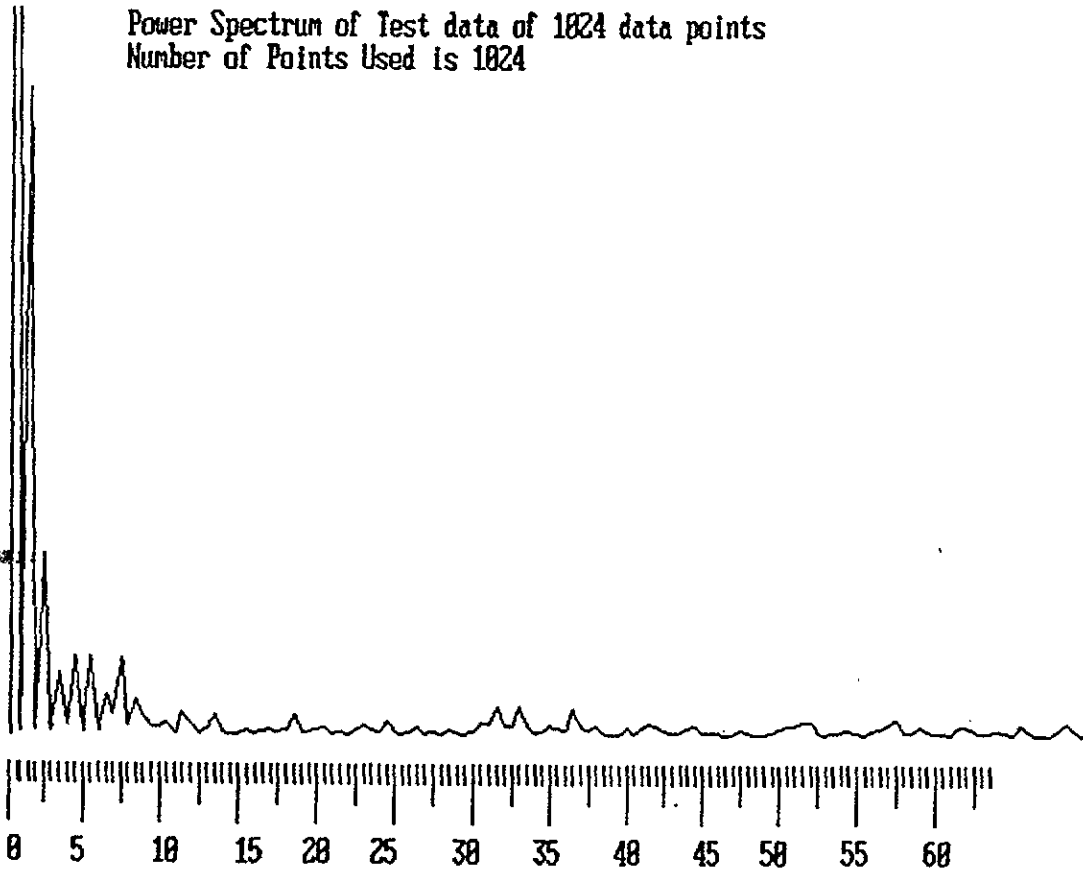


From date

Fig. 5

To date

Power Spectrum of test data of 1024 data points  
Number of Points Used is 1024



Number of cycles in Data Points Sampled

Fig. 6

Semi-log plot of Test data of 1824 data points  
Last 1824 Data Points  
Less Monotonic Component

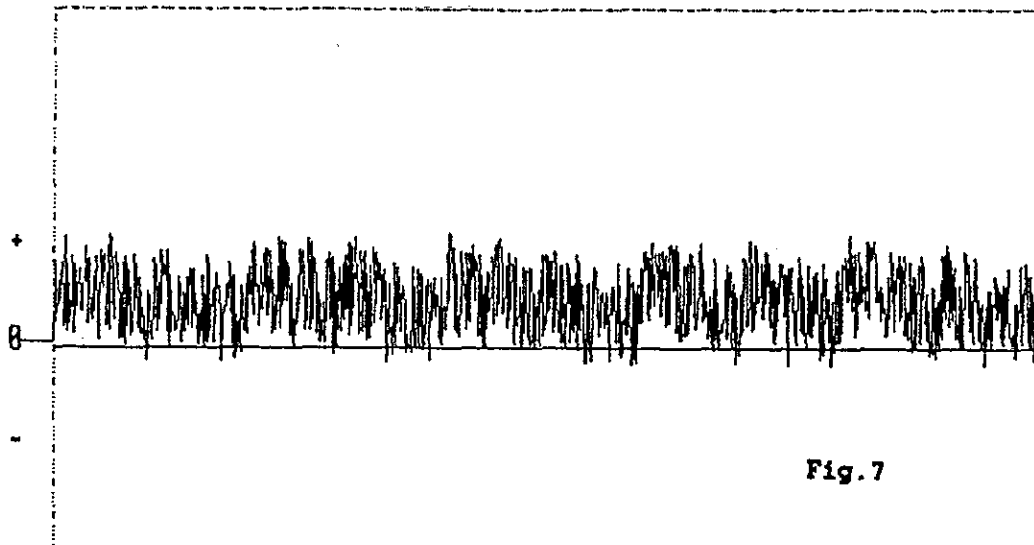


Fig. 7

4.4 years. In view of this it should be interesting to look at the Industrials and the Miners. I only have these going back to 1937 so we should also compare them with the All Ords going back to the same date. Figs. 12, 13 and 14 show these.

Figs 15, 16 and 17 show their respective power spectrums.

At least now we have a tool capable of digging out the cycles. However, it is all very well to have identified the underlying cycles in a time series, but for them to be really useful, we need to know where we are in the cycle. Do we buy or do we sell? What we need to do is to calculate the phase of the components which interest us. The power spectrum helps us identify the interesting ones and the complex numbers which the FFT program churns out gives the means of making the calculation (See Fig. 20 which shows some of the complex numbers). Fig. 18 shows the phase of the 8.5 year cycle for the Ords from July 1953 (the last 512 data points of Ords from 1937) and Fig. 19 shows the phase of the Ords from November 1909 (the last 1024 points of the 1875 series). The indication seems to be that we were just over the top of the cycle at the end of January 1995. The important word here is 'seems'. I would want to do lots more checking before I bet on it!

For an indication of just how complicated the system we are dealing with is, look at Fig. 21 which shows some of the cycles plotted on a three dimensional diagram.

#### Conclusion

The All Ords index does seem to have component sinusoidal waves which have periods of 8.5 and 4.3 years. On the other hand these are buried in hundreds of other component waves. As we have seen from Fig. 8, the power spectrum of our four experimental sine waves was dramatically changed by the introduction of random noise. Compare Fig. 8 with the pre-noise spectrum shown in Fig. 4.

Perhaps we should conclude that Fourier analysis is just one of many techniques we can experiment with when we study the shares market. Two others which come to mind are Chaos Theory and the use of Neural Networks both of which offer fertile new areas for technical analysts to study.

#### References

Numerical Recipes in C. by William Press and others

Chaotic Dynamics, an Introduction by G.L. Baker and J.P. Gollub □

Power Spectrum of Test data of 1024 data points  
Number of Points Used is 1024

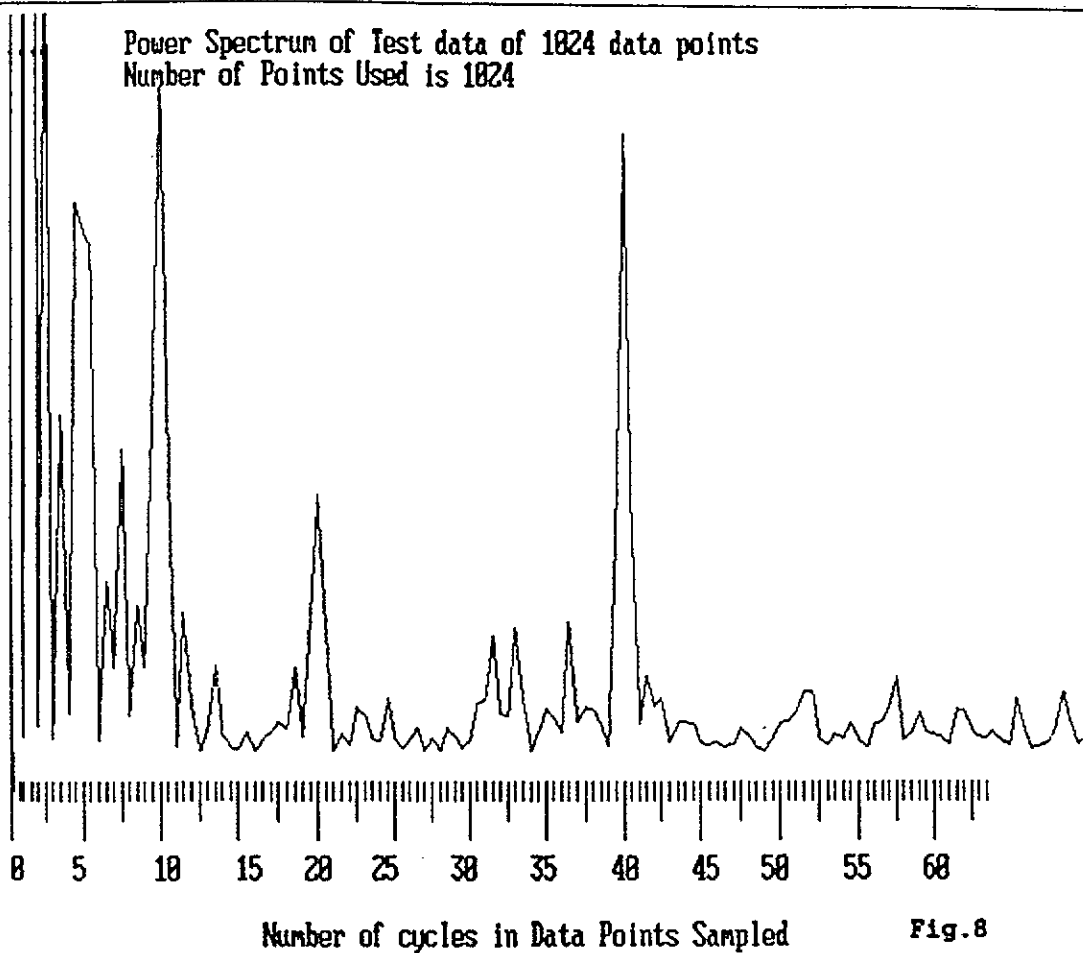


Fig.8

Ords from 1875 until Now

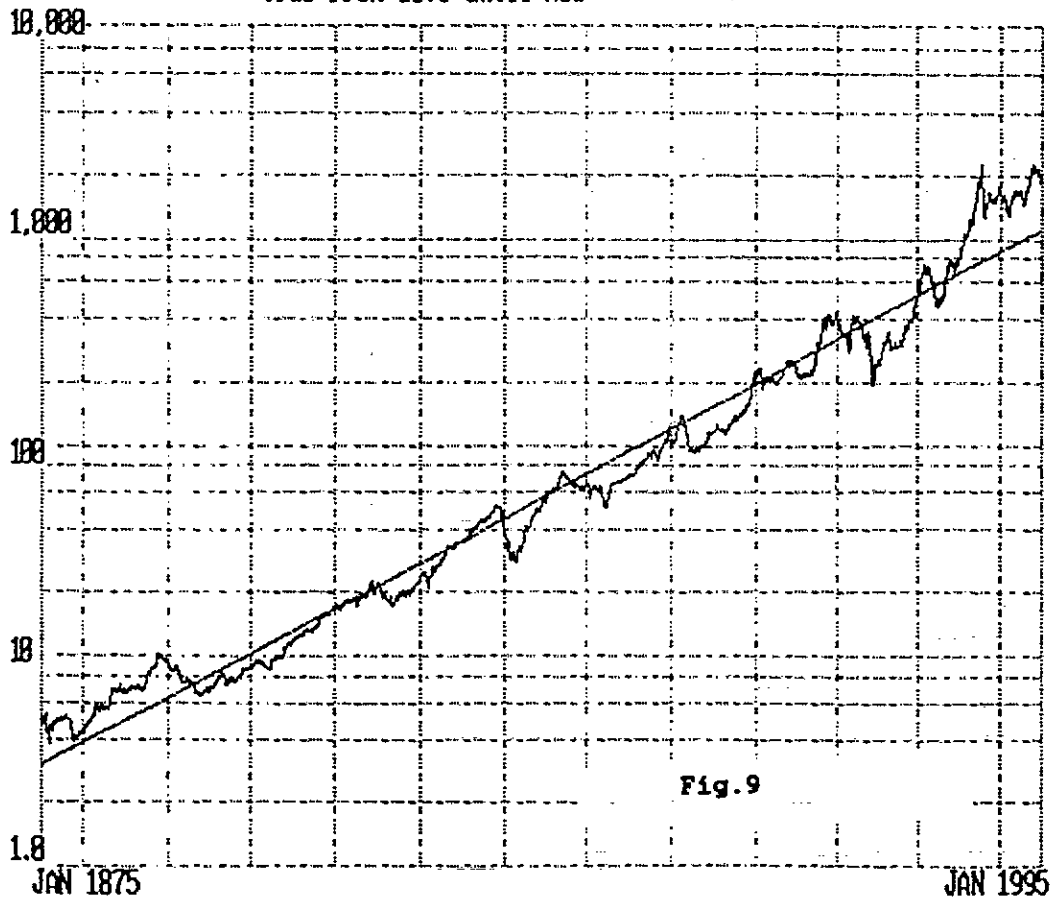
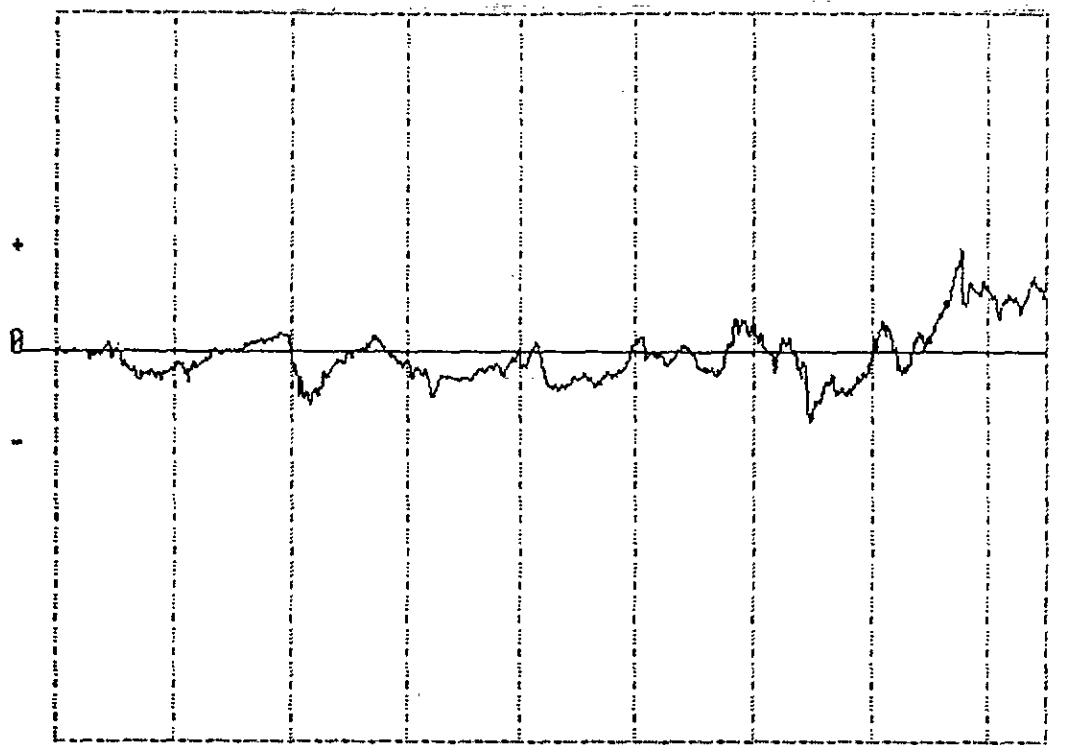


Fig.9

Semi-log plot of Ords from 1875 until Now  
Last 1824 Data Points  
Less Monotonic Component

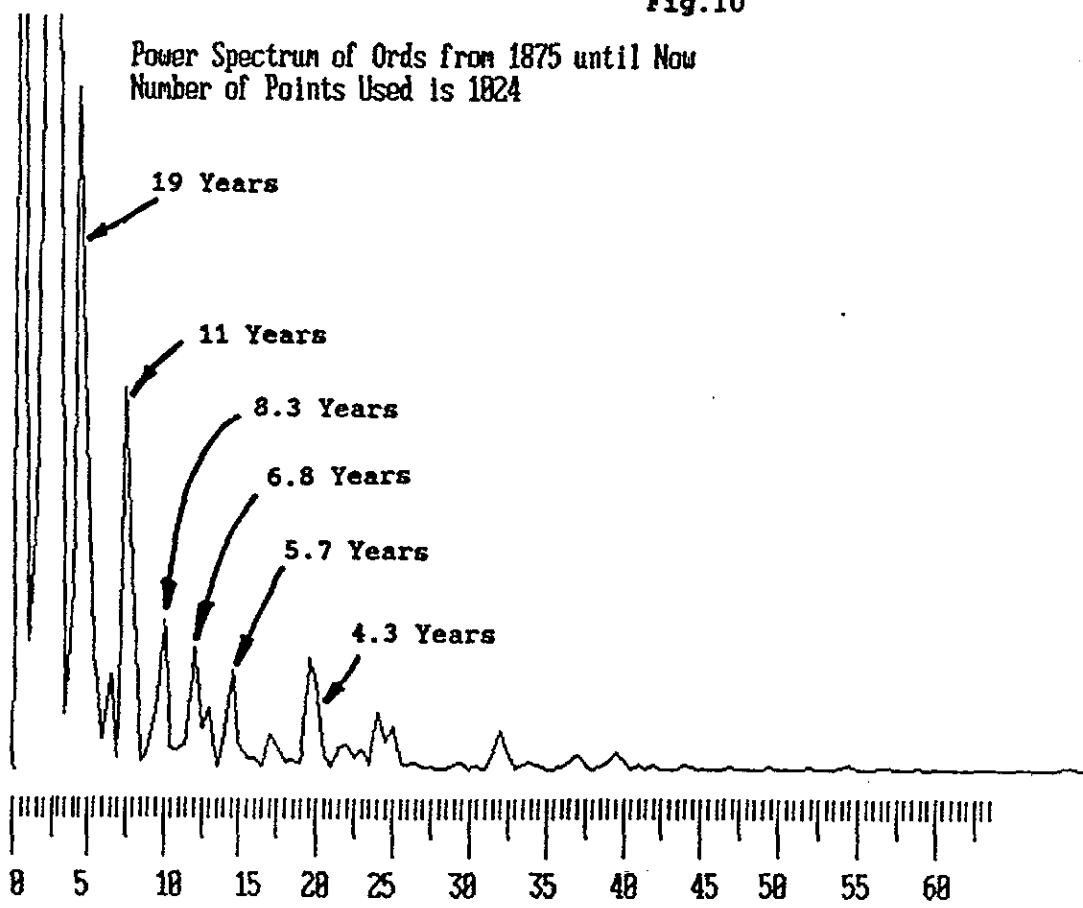


From NOV 1989

Fig.10

To JAN 1995

Power Spectrum of Ords from 1875 until Now  
Number of Points Used is 1824



Number of cycles in Data Points Sampled

Fig.11

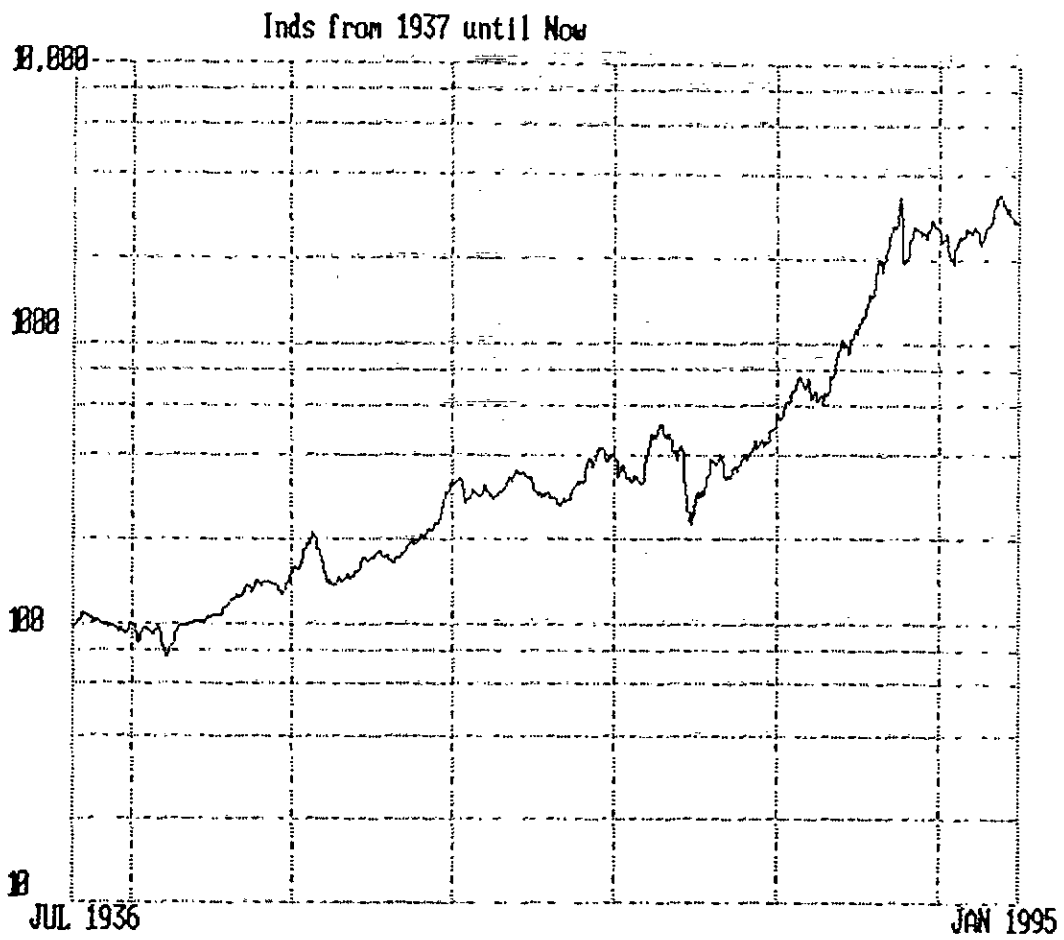


Fig.12

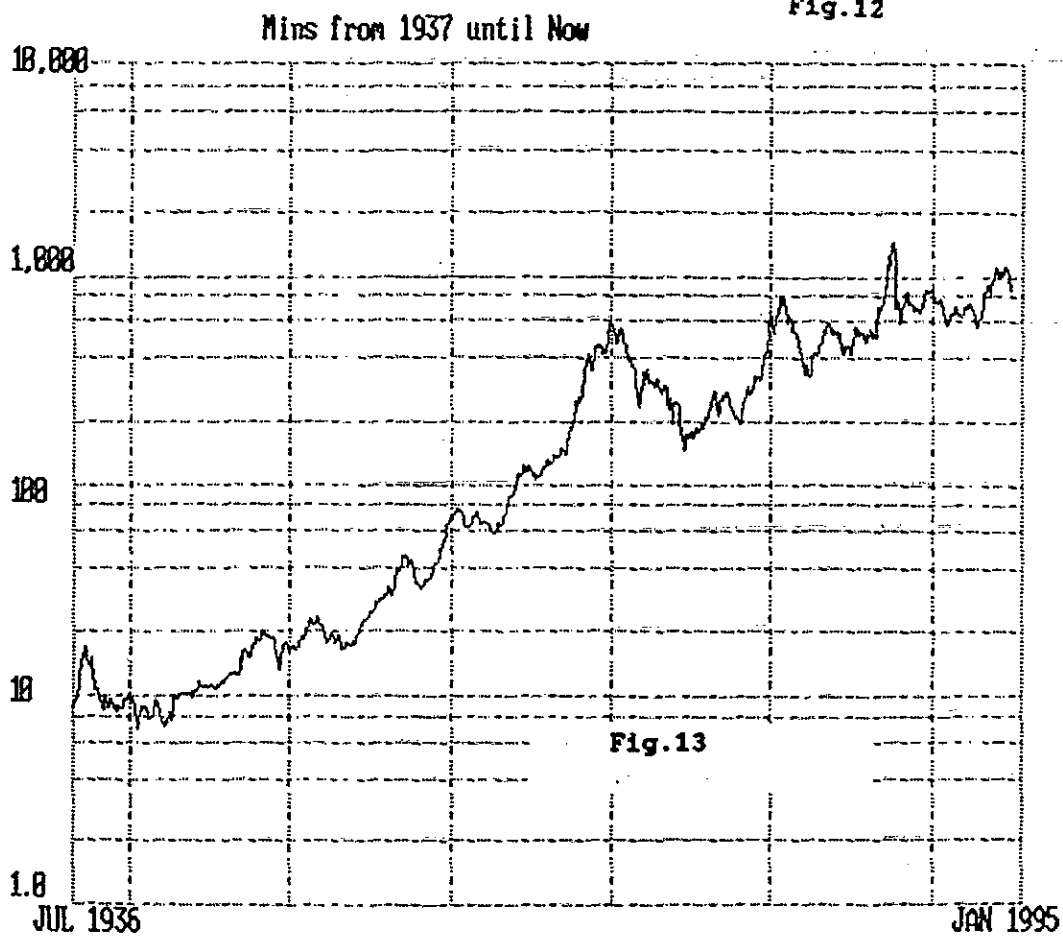


Fig.13



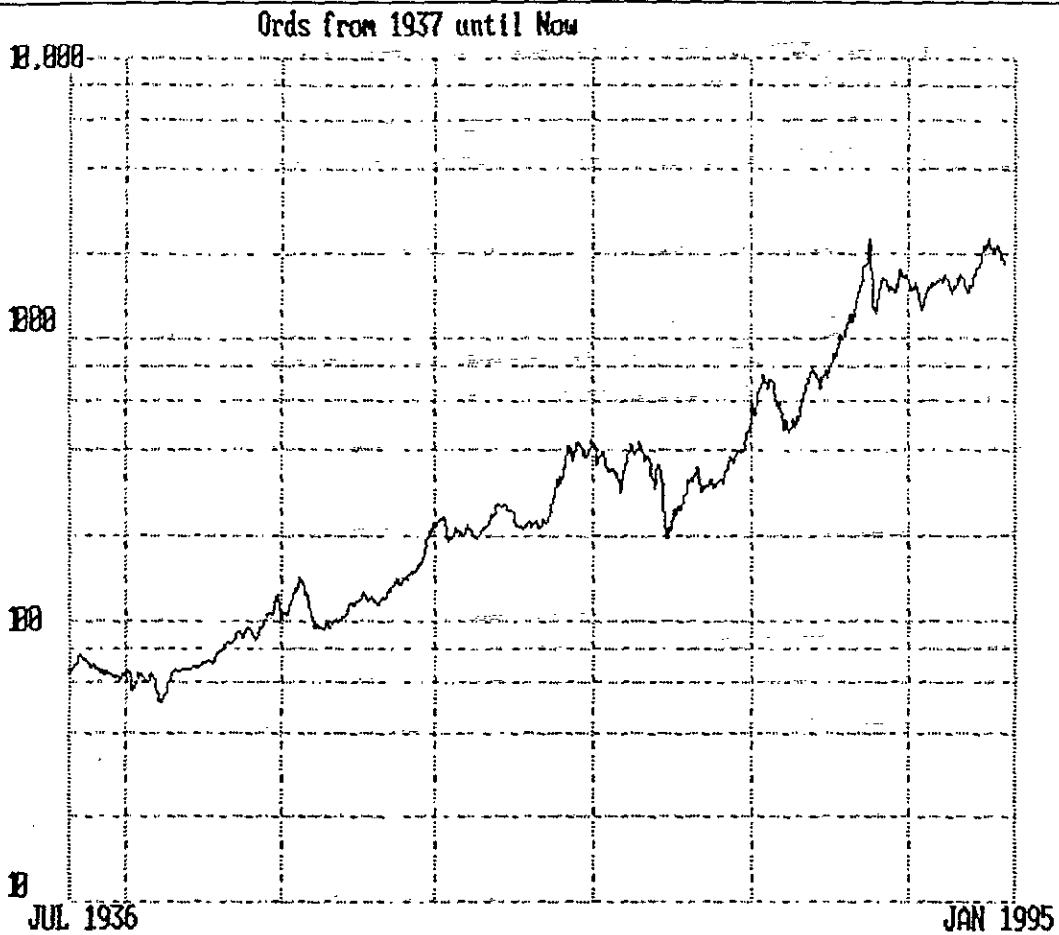


Fig.14

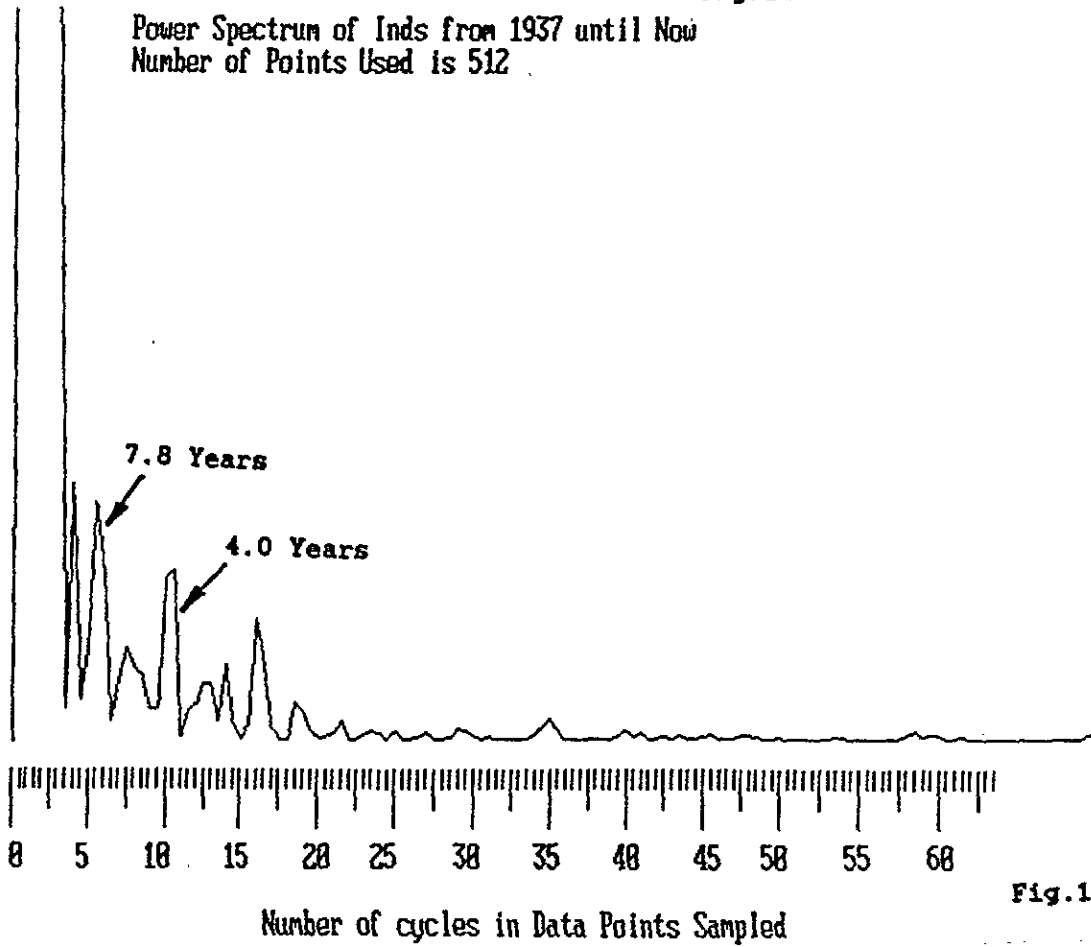


Fig.15

Power Spectrum of Mins from 1937 until Now  
Number of Points Used is 512

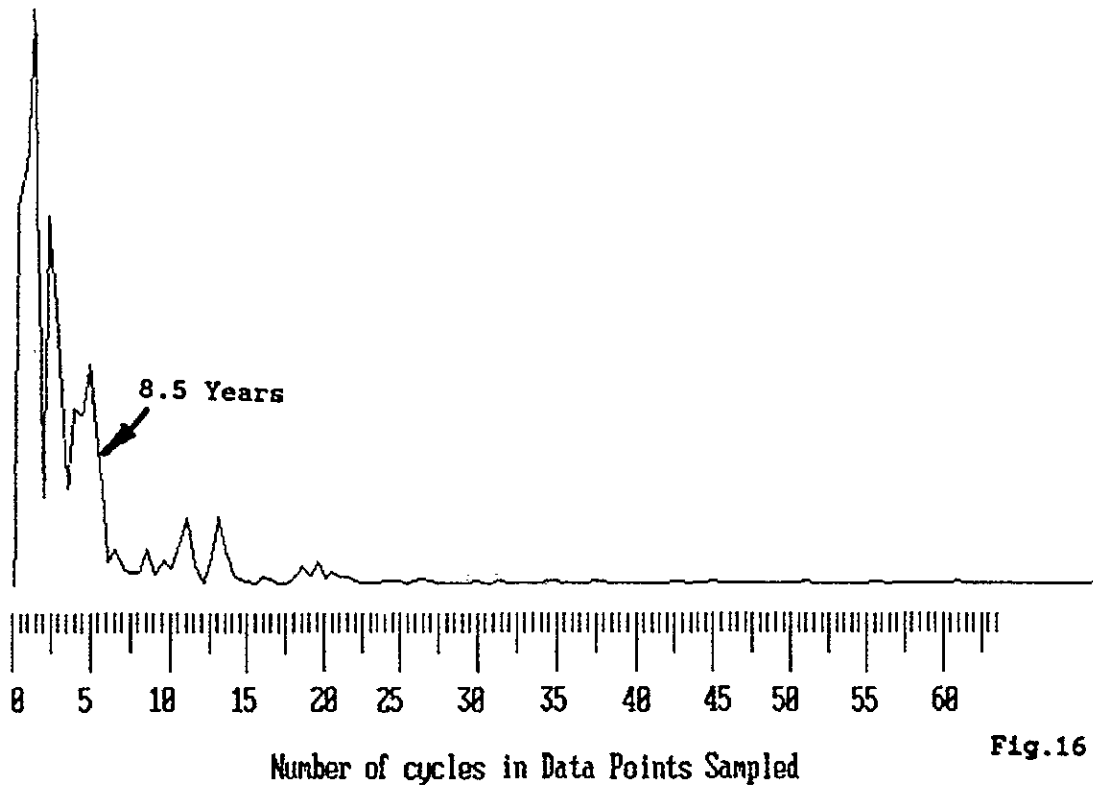


Fig.16

Power Spectrum of Ords from 1937 until Now  
Number of Points Used is 512

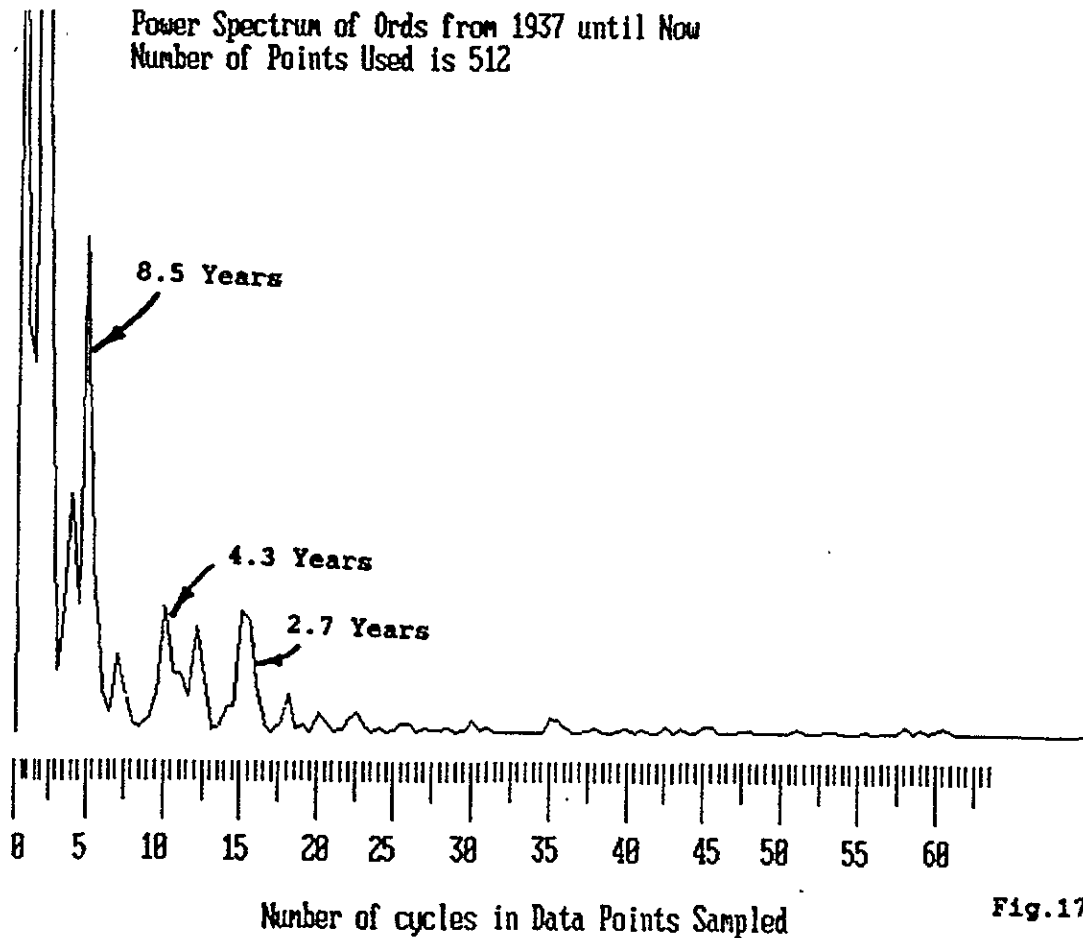


Fig.17

PHASE ANGLES OF COMPONENT SINE WAVES

Ords from July 1953 - 8.5 Year cycle

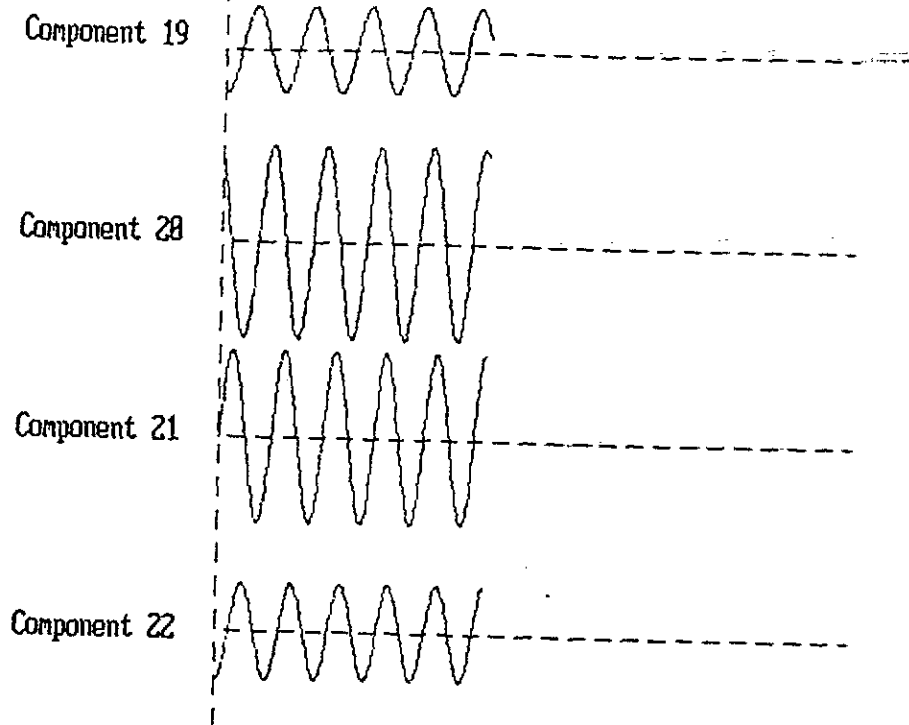


Fig.18

PHASE ANGLES OF COMPONENT SINE WAVES

Ords from Nov 1909 - 8.5 Year Cycle

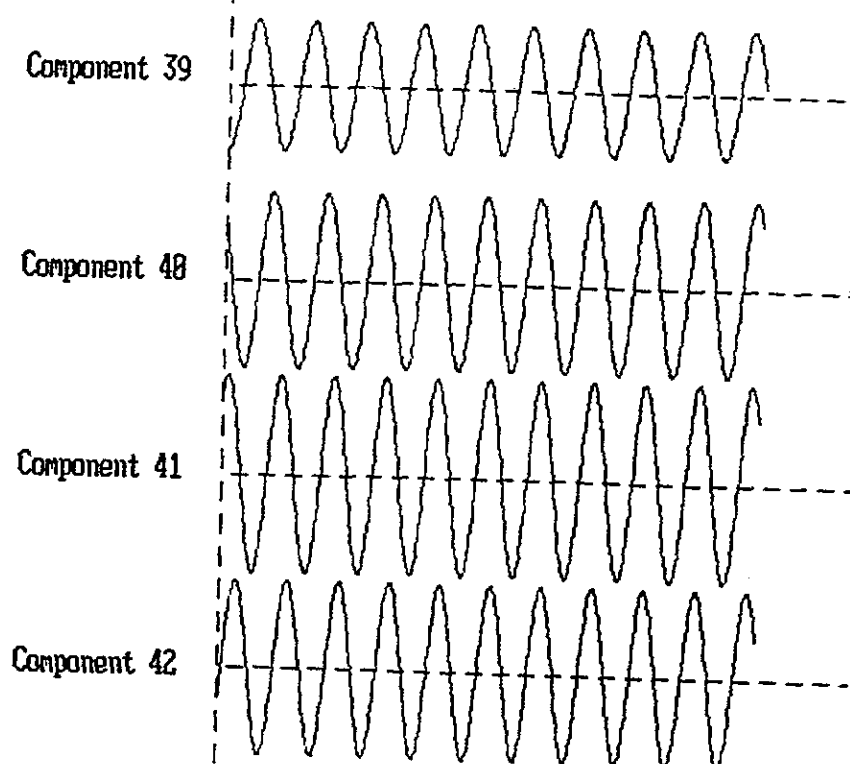


Fig.19

Element 21	Real -48.480	Imag -59.185	Vector 76.506	Element 36	Real -10.868	Imag 7.007	Vector 12.931
Element 22	Real -59.185	Imag 32.878	Vector 67.704	Element 37	Real 7.007	Imag 15.862	Vector 17.340
Element 23	Real 32.878	Imag 30.352	Vector 44.745	Element 38	Real 15.862	Imag -2.179	Vector 16.011
Element 24	Real 30.352	Imag 22.068	Vector 37.526	Element 39	Real -2.179	Imag -33.289	Vector 33.361
Element 25	Real 22.068	Imag -8.143	Vector 23.523	Element 40	Real -33.289	Imag 30.602	Vector 45.218
Element 26	Real -8.143	Imag 24.380	Vector 25.704	Element 41	Real 30.602	Imag 41.420	Vector 51.498
Element 27	Real 24.380	Imag 33.386	Vector 41.340	Element 42	Real 41.420	Imag -18.356	Vector 45.305
Element 28	Real 33.386	Imag 2.664	Vector 33.492	Element 43	Real -18.356	Imag -7.238	Vector 19.731
Element 29	Real 2.664	Imag 13.218	Vector 13.484	Element 44	Real -7.238	Imag -14.692	Vector 16.378
Element 30	Real 13.218	Imag -55.800	Vector 57.344	Element 45	Real -14.692	Imag 11.400	Vector 18.596
Element 31	Real -55.800	Imag 60.978	Vector 82.655	Element 46	Real 11.400	Imag -11.671	Vector 16.315
Element 32	Real 60.978	Imag -8.978	Vector 61.635	Element 47	Real -11.671	Imag 16.473	Vector 20.189
Element 33	Real -8.978	Imag -56.630	Vector 57.337	Element 48	Real 16.473	Imag 1.848	Vector 16.577
Element 34	Real -56.630	Imag 2.776	Vector 56.698	Element 49	Real 1.848	Imag -46.450	Vector 46.487
Element 35	Real 2.776	Imag -10.868	Vector 11.217	Element 50	Real -46.450	Imag -23.673	Vector 52.135
Element 36	Real -10.868	Imag 7.007	Vector 12.931	Element 51	Real -23.673	Imag 11.941	Vector 26.514
Element 37	Real 7.007	Imag 15.862	Vector 17.340	Element 52	Real 11.941	Imag 30.203	Vector 32.478
Element 38	Real 15.862	Imag -2.179	Vector 16.011	Element 53	Real 30.203	Imag -12.593	Vector 32.723
Element 39	Real -2.179	Imag -33.289	Vector 33.361	Element 54	Real -12.593	Imag 6.536	Vector 14.188
Element 40	Real -33.289	Imag 30.602	Vector 45.218	Element 55	Real 6.536	Imag -0.564	Vector 6.560
Element 41	Real 30.602	Imag 41.420	Vector 51.498	Element 56	Real -0.564	Imag -19.156	Vector 19.165
Element 42	Real 41.420	Imag -18.356	Vector 45.305	Element 57	Real -19.156	Imag -11.259	Vector 22.220
Element 43	Real -18.356	Imag -7.238	Vector 19.731	Element 58	Real -11.259	Imag 32.164	Vector 34.077
Element 44	Real -7.238	Imag -14.692	Vector 16.378	Element 59	Real 32.164	Imag 27.217	Vector 42.134

Fig. 20

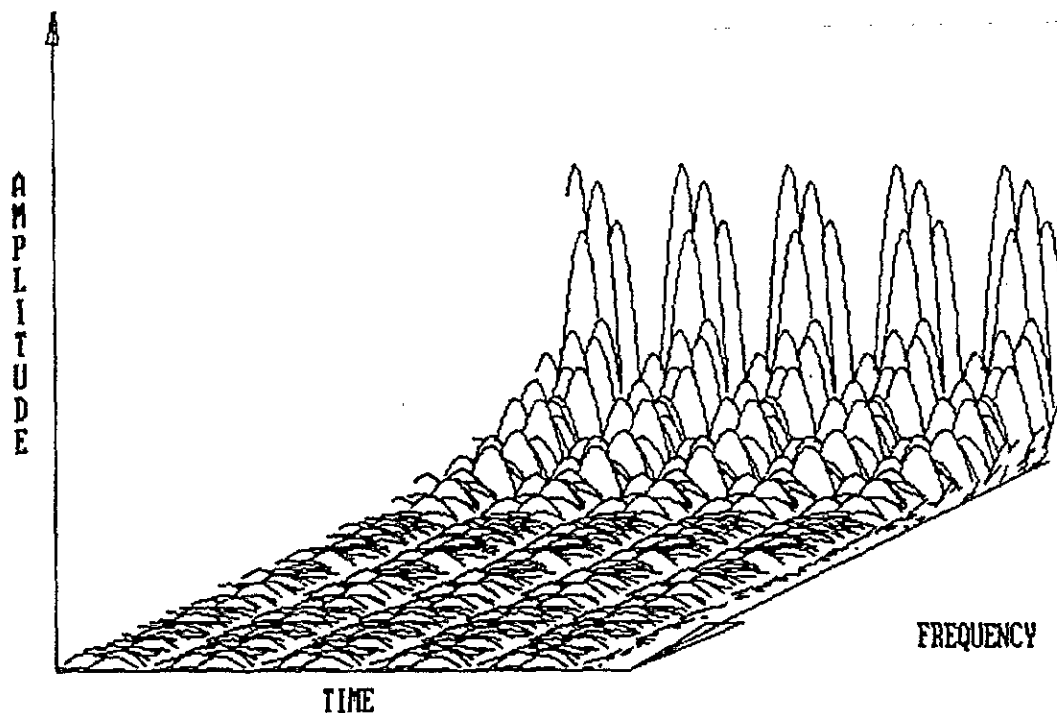


Fig. 21

## Wave after Wave

In Technical Analysis, as with all things, trends come and go. Are the latest technical analysis fashions destined to go the way of platform soles and flares ?

Patrick Young investigates.

The rapid ongoing development of technical analysis has at last put the anoraks in the limelight, charging them with the heroic task of discovering the holy grail at the epicentre of financial markets. Technical analysis has long been viewed as a panacea by some, a nuisance by others and is held in a more neutral mode of esteem by the rest. Overall, hardly any traders whatsoever can claim to be motivated solely by fundamental viewpoints or never to have taken any technical analysis methods on board. However, with the rapid growth of affordable computer technology, the range of potential methods of analysis has spiralled to unprecedented levels in the past few years. Indeed, such has been this growth that the entire realm of technical analysis may itself be in danger of becoming a victim of its own rapid growth.

Having originated in the west during the late 19th century with such relatively primitive devices as the point and figure chart first developed by Charles Dow, these initial stages were rather analogous to the initial tentative steps of the automobile industry in the Edwardian era. Indeed the similarities extend further. The rapid development of vehicles in the 1920s and 1930s established the basic principles of car design which remain sacrosanct. Just as the automobile became a truly viable means of transport incorporating state of the art technology but requiring a great deal more maintenance than would be acceptable today, similar things were afoot within the narrow confines of technical analysis. The works of William D. Gann and Ralph Nelson Elliott are even more astounding given that the sparse availability of technology didn't prevent these men from completing complex analyses of the relationship between market prices and the behaviour of financial markets. Indeed, it was these men who really set out the fundamental basis for the next half century of technical analysis, having laid out their beliefs in the relationship between price and time and the notion of a wave structure

discernible at every level from the short to the very long term.

Intriguingly, in the immediate post war era (and particularly during the 1960s and early 1970s), it is quite feasible to argue that technical analysis somewhat lost its way. During these wilderness years, much of the writings of Gann and Elliott were either discarded by existing players or ignored entirely by new financial practitioners. To carry the automobile analogy further, the automobile industry in the same period went through a rapid development of styling and a refinement in mechanics without any significant amendment to the basic automotive formula. Indeed, the German Auto Union and Mercedes Grand Prix cars of the 1930s utilised many significant innovations not to be seen again on Formula One cars until fairly recently.

Indeed, when the car industry sought to innovate from the late 1970s having been hit by an oil shock which had substantially damaged the cosiness of the post war consensus it was to history that many manufacturers returned. Take the case of Alfa Romeo, for example. The twin-spark technology so rightly lauded these days in various of its 2 litre models is not precisely the contemporary innovation that Alfa marketers would like it to appear, for this technology was actually first tested by the Milanese manufacturer in the first decade of this century!

Of course, the gradual introduction of computer technology, even in its unwieldy state of 20 or more years ago, allowed the refinement of previously discarded methods. Here, obviously, there is a parallel with the financial markets, for it was during the 1970s and 1980s that the Lambert Gann publishing concern was taken over and rejuvenated, while Robert Prechter embarked on a successful mission to popularise the Elliott Wave system. Similarly, various practitioners began to utilise the

writings of Leonardo of Pisa, and the most venerable form of technical analysis, the Fibonacci sequence, began to gain common currency amongst dealers of all shapes, sizes and time periods. In addition to these systems being revisited, Steve Nison later introduced to the West the long established notion of Japanese candlestick charting, with its slightly more holistic approach to viewing market patterns. In the midst of these revivals of past genius which have invariably taken on an almost evangelical atmosphere, there was also the initial statistical period when J. Welles Wilder jr. amongst others, launched a barrage of different oscillators and momentum indicators such as the Relative Strength Index and Stochastics. This period was effectively brought to a close with the introduction of Perry Kaufman's intriguing standard deviation channels or Bollinger bands, named after the analyst most responsible for popularising them.

But although all these modes of analysis have a very laudable basis for their rationale and all can be applied successfully to financial markets, in many ways the real asset that any single method of technical analysis has for any trader is its religious significance. For the trader who adopts a rather catholic approach to financial market trading is in many ways a stateless technical analyst. Those promoting their particular wares, quite understandably want disciples who will willingly feed off the word of the guru without seeking to broaden their horizons. Obviously this provides great advantage and also a significant disadvantage to the disciples. The huge benefit of following one particular system is at the very epicentre of human nature itself. The comfort of belonging to a specific group helps reduce the pain felt by a period of losses. So the feeling of belonging in many ways helps reduce a feeling of isolation. However, the narrowness of focus caused by using just one particular system of analysis can reduce trader efficiency as all systems have periods when they are less suited (or even entirely unsuited) to the nature of the market.

Indeed the latter function also has greater repercussions for the whole science of technical analysis. Had Gustave Le Bon been alive today,

perhaps his classic tome *Psychologie des Foules* would have incorporated a section on how even within a specific narrow area such as technical analysis there is always a fluidity, with traders moving between crowds as they discard one form of analysis and partake of another system. This in itself can be a very positive move if the trader can realistically see his previous failings in perspective and equally take up the new ideas of his latest system while also being aware of its downside.

The second function of technical analysis crowds embracing just one primary technical analysis source is that it induces certain systems to grow in popularity until they reach the extremities of their limit cycle. Disciples become disillusioned and drift off towards another form of holy grail. Such behaviour can often be seen in terms of a guru factor. To take an example of a particular system gaining acolytes and then gradually returning to a lower level of popularity with a predominantly residual level of support, Peter Steidlmeyer's Market Profile (a registered trademark of the Chicago Board of Trade) can be used in the late 1980's, with writings of Steidlmeyer were acclaimed and bars in every financial district burgeoned with traders complimenting the Market Profile system on how it aided their bottom line. Information providers rushed to add the Market Profile graphic to their systems. Yet nowadays, although many, if not most, traders are commensurate with the techniques used in the application of the Market Profile, its overall level of usage would appear to have slipped, despite Steidlmeyer's laudable developments.

The hot discussion has moved on, as have the progressive (and also the more flighty) figures of technical analysis. William Eng discusses the shortcomings of Market Profile succinctly and sensibly in his book *The Day Trader's Manual*. Amongst the points he makes is how the prerequisite normal distribution shape moved away from the previously predominant 30-minute period chosen by Steidlmeyer to a different level of degree. Despite a great deal of work updating his initial system, the Market Profile has returned to equilibrium position amongst a proportionate share of traders similar to that of Gann or Elliott.

So where does technical analysis go now? The rapid innovation in computer hardware during the past decade has led to a paradigm shift in the entire basis of technical analysis. The mathematics of chaos, fractalisation and Mesa have emerged as popular tools for technical traders. The current vogue is towards the notion of neural networks. Genetic algorithms are waiting in the wings for those whose time and budgetary constraints can stretch to their development. These are all systems which rely upon the basic criteria of relating price and time but the complexity of their mathematics is advanced even for substantial computers. And again the introduction of such technology is mirrored by the motor industry. While an internal combustion engine still powers the automobile, its many functions are increasingly controlled by complex electronics which even hold out the promise of actually driving the car without the need for a driver whatsoever. This is close to the tantalising prospect of the neural network which could remove the need for a human being to fulfil the trader function.

Therefore, is the entire nature of technical analysis about to alter significantly with the prospect of computers attempting to out-analyse each other and leading to financial markets bereft of the human touch? In fact, the more technology grows, the more the prospect diminishes. For even now, as traders are grappling to understand the multitude of indicators that populate their data screens, profitability can be found easily with only a handful of simple methods. The fact remains that good money management is still important to the continued profitability of a trader than the particular rationale by which his trading decisions are made. True, technical analysis greatly facilitates the decision process, and some of the more advanced systems produce signals which are vastly beyond the computative power of the human brain given a similar time.

But it is precisely the fact that so many institutions have moved their own systems up to the fractal of next highest degree that many profitable trades are beginning to recur based upon very simple patterns at a lower level. Classic patterns such as the Head & Shoulders may not be as frequent a sight on our screens as they were 10 years ago, partly as a result

of changing market conditions, but by going back to basics and arming oneself with little more than a slide rule, a bar chart, and Dow's embryonic invention the point and figure chart, opportunities can still abound. While institutions can undoubtedly benefit from their vastly advanced technology, there is no need for those further down the chain to become disillusioned. Indeed, those schooled in the basics of technical analysis may even hold the upper hand should there be a significant setback in stock and other asset prices. For such an event would undoubtedly result in a slashing in the technology budgets of major institutions and simpler forms of analysis may return to the fore.

The 1920s and 1930s saw very turbulent and volatile financial markets which transformed the world. It was at this period that Messrs Elliott, Gann and others were at their zenith. Yet, in the era of growth following the Second World War, technical analysis lost ground to economic fundamentalism. The technical analysts of this period failed to establish anything new or particularly exciting in their innovations. Then, just as the oil crises rocked world financial markets, the various writings of departed gurus reappeared in bookshops and were taken up by those eager to discover a method which could aid their profitability without requiring recourse to discredited or at least unprofitable economic theories.

Just as Dr Richard Dawkins books such as *The Blind Watchmaker* so eloquently discuss the nature of evolution and the rise and decline of natural systems, so too perhaps this factor is at work not just in financial markets as a whole but actually within the framework of technical analysis itself.

Perhaps within a decade or more, the fragmentation of technical analysis into such a wide-ranging array of increasingly complex, widely differing formulae will cause a gradual movement away from the entire quasi-science back to some form of more fundamental evaluation.

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## Some of the Best Indicators for the 1994/5 Bear Market

By Dawn Bolton-Smith

The charts tell the story. These indicators have been used successfully over the past three decades. They are very simple but very effective.

The Weekly Coppock Indicator gives both buy and sell signals above and below a zero line. The high amplitudes combine with other technical indicators to determine market tops and as the indicator falls to and/or below zero signals the low risk areas for medium to long term investors. It has given four major signals since 1991 and we are coming up for the fifth with the deceleration in the indicator. When it turns up and goes above zero the next bull cycle will be well underway. It is rather timely that the I.F.T.A. JOURNAL we received in the recent mailout features an excellent article on this indicator. I have found it works well on weekly figures whilst Mr Coppock's article rather concentrates on monthly data.

As a point of interest I was lucky enough to meet Mr Coppock when he addressed the Mosman Evening College Group in 1970. He made a second visit to Sydney and I had the pleasure of lunching with him on that occasion. I believe he made a great contribution to Technical Analysis and his works are worth investigating. Simple yes but so effective.

The second chart is that of a weekly close on arithmetic scale of the A.S.E. ALL INDUSTRIAL INDEX. Following the February 1994 downturn

there were no reversal signals until the break of the downtrend line which was preceded by a sideways consolidation after the November 23, 1994 low. As a further point of interest, the decline was a 50% retracement of the range from the 1991 low to 1994 high.

The third chart - one of my favourite technical tools - the advance/decline line. This is a simple one where the net rises and/or falls are added to or taken away from a cumulative total. Once again a simple break of trendline from the 1992 low told the story. The downtrend continued until it met the support of the lower line from the 1991/2 low.

When put together with some of the other technical indicators so readily accessible in our Computer Software the end of the bull market was well and truly confirmed by March 1994 so why the need for all those Fund losses.

If you are interested in starting up an advance/decline Research Technology, Sydney (02) 233-6822 have one in their Microdata service. You can use technical indicators on the A/D. The M.A.C.D. Indicator which works extremely well on waterfull declines! Either way - this combination of technical charts can be plotted manually if you don't have a computer. In fact, I think there is more to be gained by doing more work on the markets manually.

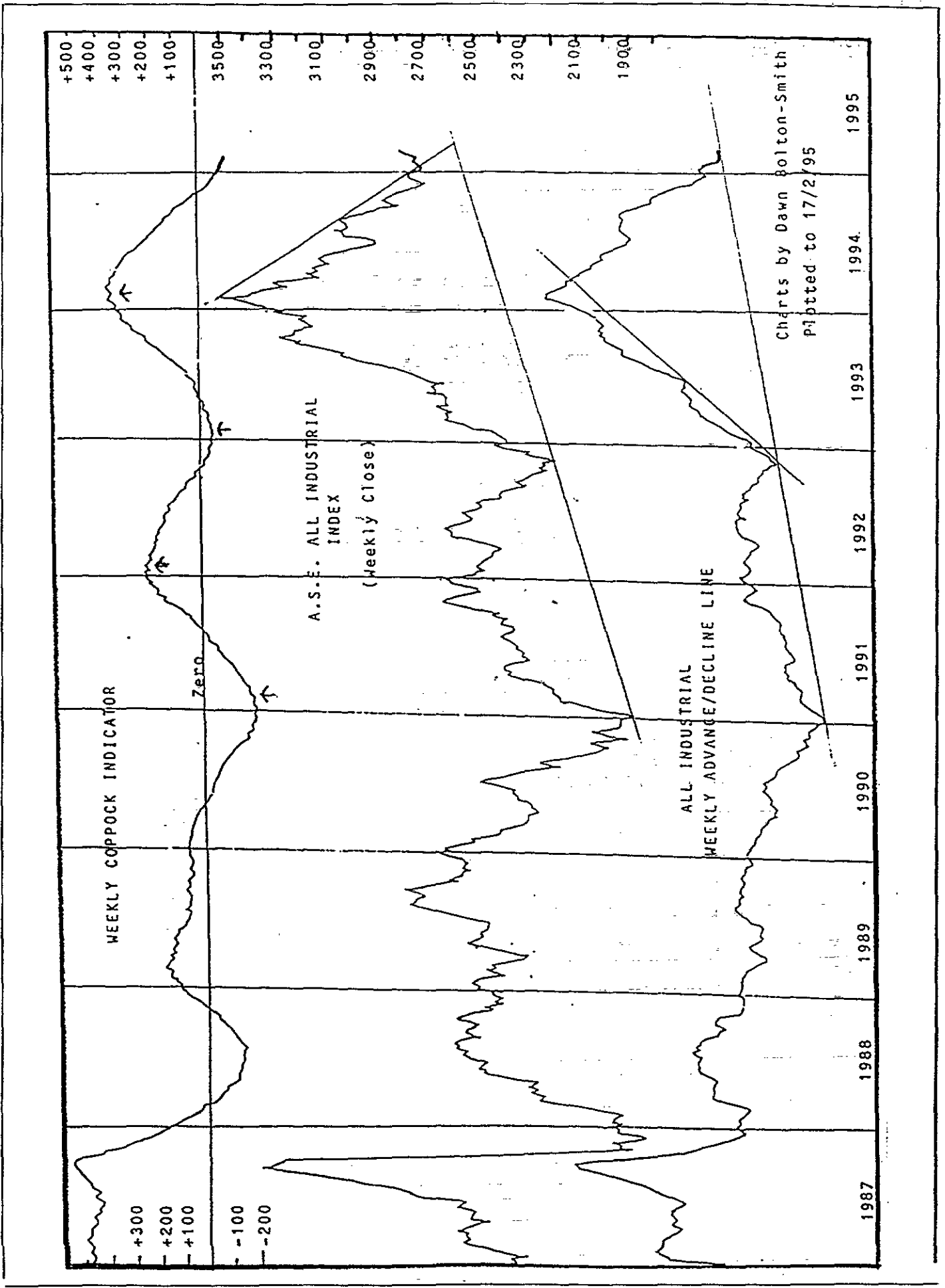
### Artificial Intelligence Systems

I am searching for someone in the Association with practical knowledge /experience in setting up artificial intelligence systems for use in generating trading signals.

If you might help please contact:

Jarron Stephens (02) 247 9766 or (02) 452 4696 during working hours





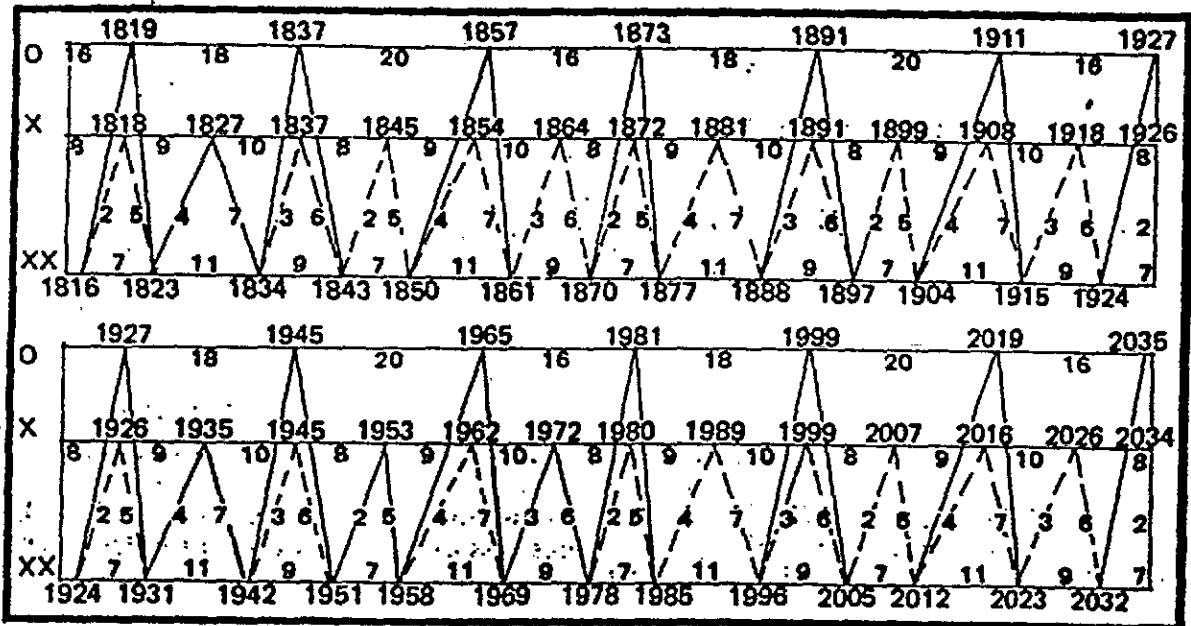
## Let's Look Again At Mr Tritch

By Bob Palmer

In 1978 a newsletter to which I subscribed published an article on Market Cycles written by A.T.A.A. member, Bob McGregor, which gave a brief introduction to Mr Tritch, an economist whose work on cycles was first published in 1872, and received press publicity again in Sydney during the 1920's and 1930. Very little is known of Mr Tritch himself. However, we can be sure he would be delighted with the results of his work had he miraculously lived until today.

Tritch's research included preparation of the graph below and predicted future cycles of prosperity and deflation with remarkable accuracy and is proof that economic cycles do exist.

The graph does not differentiate between primary cycles, super cycles or Grand Super cycles and could not be entirely accurate - nevertheless look how events have been predicted insofar as the Australian economy is concerned.



O denotes years in which panics have commenced and will commence again. Their cycles are 16, 18 and 20 years.  
 X denotes years of good times and high prices and the commencement of a downward trend. Their cycles are 8, 9 and 10 years.  
 XX denotes years of depression and the commencement of an upward trend in business. Their cycles are 9, 7 and 11 years.  
 This diagram was first brought under the notice of the public in 1872 by a Mr. Tritch. The panic which occurred in 1893 was predicted to commence in 1891 and the present depression in 1926, with a panic commencing in 1927. A return to prosperity is predicted for 1931 and no more panics are expected until 1945. This graph is certainly very remarkable and will well repay inspection, containing as it does, the truth of the adage that "History repeats itself." — as published in 1930

### 1. MR TRITCH'S PROJECTION—DATED 1872

**YEARS WHEN GRAPH WAS SUBSTANTIALLY CORRECT**

<u>PREDICTED</u>	<u>ACTUAL</u>	<u>REMARKS</u>
1877	1877	Great Depression
1881	1881	Recovery from Secondary Recession
1897	1896	Depth of recession
1891	1891	GDP Peaks, Bankruptcies, wool prices fall
1899	1899	Boer War Commences
1911	1911-12	European Rivalries, Tensions & Treaties cause German rearmament
1915	1916	Wartime Deflation
1927	1928	Increasing unemployment portends depression
1931	1931	Lowest point of Great Depression
1942	1942	Low point World War 2, Deflation
1945	1945	War ends. Full employment
1962	1962	Credit squeeze
1965	1964	Strong commodity markets
1969	1969	Stockmarket pullback during mining boom
1972	1972	Mining boom
1978	1977	Fifth Australian Post war recession
1980	1980	Speculative land boom
1989	1989	Asset price inflation
1996	-	WATCH THIS SPACE - OR WAS IT 1995?

**CYCLES WHERE TWO YEAR VARIATIONS OCCUR**

1904	1902	Deflation following Boer War
1918	1920	Post war boom
1936	1938	Recovery from Depression
1951	1949	Devaluation of Sterling
1953	1951	Wool prices peak
1958	1960	Anti-inflationary credit restrictions
1985	1987	Stockmarket crash

From the above analyses we see a high degree of correlation between Mr Tritch's predictions and events as they have subsequently unfolded over a period of 123 years (at time of writing). A marvellous record!

How can we benefit from Mr Tritch's work?

1. We know when to look for turning points in the market. I for one will be keeping a watchful eye in 1996 and 1999 when European reconstruction should bring boom conditions.
2. From your present age and expected trading life - refer to Mr Tritch's graph and just count off the number of Bull and Bear markets you might expect to experience.
3. If uncertain of major market directions some comfort may be obtained by locating present times on the graph.
4. If you are inclined to speculate on penny dreadfuls or second rank stocks, the graph may assist in your own assessment of when to be in or out of the market or when hedging may be required.

## Judgement Biases How they Affect Your Performance

By Dr. Van K. Tharp Ph.D  
International Institute of Trading Mastery, Inc.

French Economist George Anderla has measured changes in the rate of information flow with which we human beings must cope. Information flow doubled in the 1500 years between the time of Jesus and Leonardo DaVince. It doubled again by the year 1750 (i.e., in about 250 years). The next doubling only took about 150 years to the turn of the century. The onset of the computer age reduced the doubling time to about 5 years. And, with today's computers offering electronic bulletin boards, CD ROMs, fiber optics, the internet, etc, the amount of information to which we are exposed currently doubles in about a year.<sup>1</sup>

Researchers now estimate that humans, with what we currently use of our brain potential, can only take in 1-2% of the visual information available. And, for traders and investors the situation is at an extreme. A trader or investor, looking at every market in the world simultaneously, could easily have about a million bits of information coming at him or her every second. And since there are usually some markets open around the world at all times, the information flow does not stop. Some poor traders actually stay glued to their trading screens, trying to process as much information as possible for as long as their brain will permit.

The conscious mind has a limited capacity to process about 7 plus or minus two chunks of information at a time under ideal conditions. A "chunk of information could be one bit or it could be thousands of bits (for example, a chunk could be the number 0 or a number like 7,941). Nevertheless, the flow of information we must process by far exceeds our conscious capacity.

Thus, we can consciously process 7 plus or minus 2 chunks of information. Yet we have millions of bits of information coming at us every second. And the current rate of information availability is now doubling every year. How do we cope?

The answer is that we generalize, delete, and distort the information to which we are exposed. We generalize and delete most of the information — "Oh, I'm not interested in the stock market. That one sentence takes about 90% of the information available on the markets, generalizes it as stock market information, and then deletes it from consideration.

### *Peak Performance Trading Seminar with Market Wizard Trading Coach*

*Dr Van K. Tharp*

Dr Van K. Tharp was interviewed in Jack Schwager's Market Wizards book., and was trading psychology editor and a regular contributor to Trading Analysis of Stocks and Commodities Magazine.

He will be presenting his seminar on April 29 & 30 1995 in Sydney at the Ritz Carlton Hotel.

For details or enquiries contact:

Paul Simmons on (03) 497 4867

We also generalize the information we do pay attention to by deciding, "I'm only going to look at the daily bar charts on markets that meet the following criteria...." We then have our computers sort the data according to those criteria so that an incredible amount of information is suddenly reduced to several lines on a computer screen. Those few lines are something we can process in our conscious minds.

Most traders and investors then distort the generalized information that remains by representing it as an indicator. For example, we don't just look at the last bar. Instead, we think the information is much more meaningful in the form of a 10-day exponential moving average or a 14-day RSI or a stochastic etc.. All of these indicators are examples of distortions. And what people trade are "their beliefs about the distortion" — which may or may not be useful beliefs.

Psychologists have taken a lot of these deletions and distortions and grouped them together under the label "judgmental heuristics." They are called "judgmental" because they affect our decision-making process. They are called "heuristics" because they allow us to sift through and sort out a lot of information in a short period of time. We could never make market decisions without them, but they are also very dangerous to people who are not aware that they exist. They affect the way we develop trading systems and make decisions about the market.

In 1993, I wrote a newsletter on psychological limitations to system development. Those limitations include a number of judgmental heuristics which I talk about in several of my seminars. When you write and talk about something enough, you sometimes get some interesting insights. I have.

It's useful to review the material on judgmental heuristics with respect to how people develop a methodology to make decisions about the market and how they subsequently use that methodology to trade or invest. What assumptions are people making when they delete and generalize various market information? What assumptions are they making when they distort information in the form of various indicators? And is the resulting information meaningful for decision-making?

*The primary way most people use judgmental heuristics is to preserve the status quo. We typically trade our beliefs about the market and once we've made up our minds about those beliefs, we're not likely to change them. And when we play the markets, we assume that we are considering all of the available information. Instead, we may have already eliminated the most useful information available by our selective perception.*

Interestingly enough, William Eckert points out, in his chapter of *The New Market Wizards*, that progress in knowledge results more from efforts to find fault with our theories, rather than prove them. If his concept is true, then the more we tend to realize our beliefs and assumptions (especially about the market) and disprove them, more success we are likely to have making money in the market.

Consequently, my purpose in writing this update is to discuss some of the most common biases that influence traders and investors, show how they limit you, and then give you some suggestions for becoming much more creative and insightful in your market approach. I want to present many of these biases through the medium of a simple daily bar chart. Hopefully, this will be information that everyone can profit from — either by realizing their limitations and what it does to their trading or by providing you with some new ideas that you can use to increase your profits.

I've divided this update into four sections: 1) Biases that influence how you think about trading

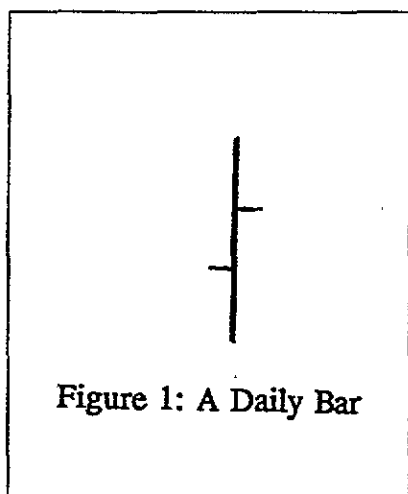
systems; 2) Biases that influence how you test trading systems; 3) Biases that influence how you trade; and 4) How to improve your market performance given this knowledge.

Incidentally, I cannot write this newsletter without using the very phenomenon about which I am talking — judgmental heuristics. Furthermore, I must delete, distort, and generalize the available information in order to make conclusions. Thus, with that caution in mind, let's look at some examples.

### Biases that Affect How You Think About Trading Systems.

Before you think about trading systems, you have to represent market information in a way that your brain can cope with the available information. Look at the chart in figure 1 on page 3. It illustrates a typical bar chart — which is how most of you think about the market. A daily bar chart, as shown in the illustration, takes a day's worth of data and summarizes it. That summary includes, at most, four pieces of information — the open, the close, the high, and the low. Japanese candlesticks make the information a little more obvious and also give you information about whether the market generally moved up or down.

1. **Representation:** That daily bar chart is a good example of the first heuristic, which everyone uses, called the law of representation. What it means is that people assume when something is assigned to represent something that it really is what it is supposed to represent. Thus, most of us just look at the daily bar and accept that it represents a day's worth of trading. In reality, it's just a line on a piece of paper — no more and no less. Yet, you probably have accepted that it is meaningful because:



- \* You were told it was meaningful when you first started studying the markets.
- \* Everybody else uses daily bars to represent the markets.
- \* When you purchase data, it's typically in daily bar format.
- \* When you think about a day's worth of trading, you typically picture a dailybar.

The bar chart in figure 1 only shows you two things. First of all, it shows the range of prices that occurred throughout the day. Second, it says a little bit about how prices moved — they moved from the open to the close (plus some variation for the high and the low).

Let's look at some information that's contained in a day's worth of trading. This information might be useful to traders or investors, but it is not contained in the typical daily bar. First, a daily bar does not show you how much activity occurred. It does not show you how much activity occurred at what price. It does not show you when during the day the underlying commodity or equity was at a given

price (except at the beginning or the end). You can get some of this information by lowering your time frame and looking at five minute bars or tick charts. But wait — wasn't the purpose of the daily bar chart to reduce the information flow so you are not overwhelmed?

There is a lot of other information that might be useful to traders that is not shown in the daily bar chart. Was most of the activity from people who were buying or selling? In the case of futures, were they opening up new contracts or closing out old ones? What kind of people were doing the trading? Did a handful of floor traders trade with each other all day long — trying to outguess and outmaneuver each other? How much of the activity was in the form of a single unit (100 shares of stock or a single commodity contract)? How much of the activity was in large units? How much was bought or sold by large investors? And how much was bought and sold by CTAs or portfolio managers? How much was bought or sold by hedgers or big companies?

And there is a third class of information, that is not represented in the daily bar chart — who's in the market. For example, how many people are currently holding long or short positions? What is the size of their positions? That information is available, but it is generally not easily accessible. The various exchanges, with the kind of computers available today, could store and report information like this each day:

*The price moved from 83 to 85. There are 4718 investors holding long positions and the average position size is 200 units. During the day, long positions increased by a total of 50,600 units. There are 298 investors holding short positions with an average position size of 450 units. Short positions increased by 5 units. The top 100 positions are held by the following people and their position is ... [followed by a listing].*

Perhaps, you're saying, "Yes, I'd like to know who owns what and how large their positions are." Well, if you had that information, would you know what to do with it? Would it be any more meaningful? Probably not — unless you have some beliefs that would allow you to trade it.

The daily bar chart also does not give you any statistical probabilities — given that X happens what is the likelihood of Y. You can use historical data to determine the likelihood of Y, but only if variable X (and Y, for that matter) are contained in your data. But what if X or Y are interesting and not contained in your data?

Finally, there is a final type of information that is not included in a simple daily bar — psychological information. That information involves the strength of conviction of the long positions and the short positions. When would various traders be likely to liquidate and at what price? How will they react to various news items or price movements? And how many people are sitting on outside of the markets with the belief that it is going up or the belief that it is going down? Are they likely to convert those beliefs into market positions and under what conditions? And if they did, at what price and how much money are they likely to have behind them to back their positions? But do you have beliefs that would help you make money from this information?

Until now, you've probable thought that a daily bar chart really was the market. Remember, all you're really looking at is a single line on your computer or chart book. You are assuming that it represents the market. You might call it a generalization about the market's activity in a given day, but that is the best you can call it. **The scary thing is that a daily bar is typically the raw data which you manipulate to make your decisions.**

Hopefully, you're beginning to understand why judgmental heuristics are so important to you as a trader. Yet all I've given you is one example of one heuristic — the tendency we have to assume that a representation of a day's market activity is what it really represents.

You could just trade bar charts. But most people want to do something with their data before they trade, so they use indicators. Unfortunately, people do the same thing with market indicators — they assume they are reality, rather than attempts to represent something that might occur. RSI, Stochastics, Moving Averages, MACD, etc. all seem to take on a reality and people forget they are just distortions of raw data that are assumed to represent something.

For example, think about the technical concept of support levels on a chart. Originally, technicians observed that once prices dropped to a certain area on the chart, they seemed to bounce back. That area was then assumed to be a level at which a lot of buyers were willing to buy and thus "support" the price of the stock. Unfortunately, many people treat words like "support level" as if it is a real concept rather than simply an attempt to represent a relationship that has been observed in the past.

I've previously talked about the representativeness bias in the sense that **people tend to judge something by what it "looks like" as opposed to what its probability rate is.** This is especially important in terms of using a trading system or trading signal. Have you considered probability rate information in developing your trading system or assessing the validity of your signals? That is, do you consider the percentage of time that your predicted outcome follows your signal? Probably not, because I don't know one trader in 1,000 who does that — even though I tell people about it constantly.

Now let's add a few more biases and determine what these additional biases might do to your thinking about the markets.

**2. Reliability.** A related bias is to assume our data is reliable — that it really is what it is supposed to be. With respect to the daily bar chart, when we see one, we just commonly assume that it represents a day's worth of data. It looks like a day's worth of data so that's what it must be. But what about the accuracy of the data.

Seasoned traders and investors know that data reliability is one of the worst problems that traders can have. Most data vendors are fairly accurate with respect to daily bar charts, but when you start using tick data, 5-minute bars, 30-minute bars, etc., accuracy goes out the window. *Thus, if you are testing a system based on 5-minute bars, most of your results (good or bad) could have to do with inaccurate data rather than real expected results.*

But let's assume that you are accepting the fact that daily bar charts really do represent the market. You wish to accept that generalization and trade them. That's fine, but let me show you how many more biases probably creep into your thinking next.

**3. The Lotto Bias or the Control Bias:** The lotto bias relates to the increased confidence people have when they, in some way, manipulate data — as if manipulating that data is somehow meaningful and gives them control over the market. Now that you've accepted the daily bar chart as your way of representing the market, you must either trade daily bars or manipulate them in some way until you feel confident enough to trade them. But of course the data manipulation itself often can and will give



you this increased confidence...

A perfect example of how this works is the state run lottery game called **lotto**. When you play lotto, you get to pick some numbers (usually 7 of them) and if you happen to hit all of them, you become an instant millionaire. People really like to play the lotto game (even logical people who understand the odds). Why? Because the prize is so big and the risk is so small (a dollar ticket is small compared to the size of the prize) that people are drawn to play. It doesn't matter to them that the odds are so stacked against them that if they bought a million tickets they still would not be likely to win. Your chances of winning a million dollars in a state run lottery is about 1 in 13 million (and the odds are much greater if you expect to win more).

The big prize for such a small amount of money is a heuristic<sup>2</sup>, but it's not the lotto bias. The lotto bias is the illusion of control that people get when they play the game. *People think that because they get to pick the numbers that their odds of success are somehow improved.* Thus, some people might suspect that if they picked the numbers in their birthday and their anniversary, it might improve their chances for winning. For example, about 10 years ago a man won the jackpot in the Spanish national lottery. He won it because of his interpretation of his dream. It seems that he dreamt about the number 7 for 7 straight nights. Since he thought that 7 times 7 was 48, he selected a ticket with the numbers 4 and 8 on it.

Others, rather than using their dreams, consult with psychics or astrologers. In fact, you can purchase all sorts of advice to help you win the lotto. Some people, who have analyzed the numbers thinking they can predict subsequent numbers, are quite willing to sell you their advice. Others have their own lotto machines and believe that if they generate a random sequence of numbers it might just correspond to what the state-controlled lotto machine might select. They are also willing to sell you advice. And if some guru or astrologer claims to have several jackpot winners (a possibility if there are enough people following them), then many more people will be attracted to that person. People will do anything to find the magic numbers.

Traders and investors have the same bias with respect to the market. They think that because they get to pick what they buy or sell that they have some control over the outcome. Perhaps, there is some truth to the value of exact timing in the success of certain traders and investors — but not to the extent that most people think.

What does all of this have to do with how people design trading systems? When I developed the random entry trading system the purpose was to show that there are a number of components to system design. Some of these components are much more important than others if you want to make money. With the right exits and proper money management, almost any system can make money and the random entry system was a perfect example of that.

Yet I'm amazed at what people consider a trading system! For example, one gentleman recently visited me from Australia. He'd been talking with various gurus all over the United States about what kind of trading systems work. At dinner one night, he told me what he'd learned and showed me the "guts" of the various systems he'd discovered so that I could give him my blessing. He had some great ideas. Yet, all of his trading systems, as he relayed them to me, had to do with entry techniques. In fact, the only thing he described about each trading system was the entry. My comment was that he was on the right track, but if he'd now spend at least as much time working on his exits and money management then he'd really have a good system.

Basically, in order to make money in the markets, you have to work on one of four key assumptions:

- \* You must pick tops or bottoms and by doing so make money. This seems to be the obvious way to make a fortune. Most people gravitate toward this assumption — especially the greedy ones and the perfectionists. It's part of the fascination that people have with entry techniques. However, it is generally the route to lose a lot of money fast, waste time, and incur a lot of frustration.
- \* If you can in some way manipulate the market data, your chances of winning will increase. This sounds a bit facetious, but it describes how so many people develop systems. Find a simple manipulation and if it seems to increase your chances of success (it makes money in your test run), then trade it. This is a classic example of the control bias.
- \* Locate a trend and find a way to capture as much of it as possible. This is the classic way to make money in the market, but more and more traders are concluding that the market doesn't trend any more and that trend following doesn't work.<sup>3</sup> In most cases this conclusion then becomes a justification for adopting assumption 1 or 2.
- \* Determine probabilities and percentages and trade them. This solution to making money in the markets is so obvious, and very few traders or investors use it. Why? Because of heuristic biases like the "*law of small numbers.*"

#### 4. The Law of Small Numbers:

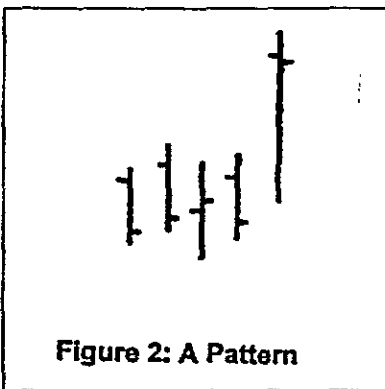


Figure 2: A Pattern

The pattern shown in figure 2 could represent another bias for some people. There are four days in which the market does nothing, followed by a big rise. If you peruse through some chart books, you might find four or five examples like that. The law of small numbers says that it doesn't take many such cases for you to jump to a conclusion: i.e., let's enter the market when we have four days in a narrow range followed by a big jump in prices.

In fact, my observation is that most people trade by following the patterns they observe in a few well-chosen examples. If you see a pattern like the one shown in figure 2, followed by a large move, then you assume that the pattern is a good entry signal. Notice that all four biases, discussed so far, have entered into this decision.

The following quote from William Eckert really describes this bias well:

*The human mind was made to create patterns. It will see patterns in random data.... We don't look at data neutrally — that is, when the human eye scans a chart, it doesn't give all data points equal weight. Instead, it will focus on certain outstanding cases, and we tend to form our*

*opinions on the basis of these special cases. It's human nature to pick out the stunning successes of a method and to overlook the day-in, day-out losses that grind you to the bone. Thus, even a fairly careful perusal of the charts is prone to leave the researcher with the idea that the system is a lot better than it really is.... The desire to find patterns is the same human quirk that convinces people that there is validity in superstitions, or astrology, or fortune telling. The successes are much more startling than the failures. You remember the times when the oracle really hit the nail on the head, and you tend to forget the cases in which the prediction was ambiguous or wrong<sup>4</sup>*

Scientific research knows about this kind of bias. Even the most careful researcher will tend to bias his result toward his or her hypothesis. That's why scientists have double blind tests — tests in which the experimenter does not know which group is the experimental group and which group is the control group until the experiment is over.

**5. The Conservatism Bias.** The human mind is quick to see the few outstanding examples of moves that work while avoiding or ignoring examples that don't work. For example, if you looked at a lot of data, you might find that the pattern in figure 2 was followed by a large move 20% of the time. The rest of the time nothing significant happened.

Most people totally ignore the contradictory evidence, despite the fact that it is overwhelming. However, after 7 or 8 losses in a row, they suddenly begin to be concerned about the validity of their trading system without ever planning how many losses could occur.

If the move that occurs 20% of the time is large enough, then it is still tradable, but only if you are careful to cut losses short during the 80% of the moves when nothing happens. But, of course, that points out the importance of the lotto bias. If you just concentrate on the pattern, you probably won't make money.

**6. Randomness Bias.** One reason people like to pick tops and bottoms is that they assume the market can and will turn around at any time. Basically, they assume that the market is random. But there are two fatal flaws in that assumption.

First, the market may have characteristics of randomness. For example, you can generate a series of bar charts using a random number generator. When you look at those bar charts, they look like bar charts. But this is an example of the representativeness bias — "looking like is not "being." This kind of data is unlike market data because the distribution of prices in the market has extreme tails that you could never predict from normally-distributed random prices. Why? When you look at market data, the sample variability just gets larger and larger as you add more data. The 8,000 point drop in the S&P that occurred on October 19, 1987, within a decade of the inauguration of the S&P contract, would be difficult to predict from a random number series. It might occur once in 10,000 years, but that event occurred in our lifetime and it could occur again.

The fact that market price distributions tend to have an infinite variance, or nearly so, suggests that more extreme scenarios than you might imagine are right around the corner. As a result, any derived estimate of risk will be significantly underestimated. And unfortunately, most people take way too much risk in the market. When Market Wizards like Ed Seykota and Tom Basso<sup>5</sup> claim that risking as much as 3% of your equity is being a "gunslinger," it suggests that most people are really "crazy" in the amount of risk they take.

Second, people fail to understand randomness. When a long trend does occur in a random sequence, people assume that it is not random. They develop theories to suggest that it is something other than a long series in a random sequence. This tendency comes from our natural inclination to treat the world as if everything were predictable and understandable. As a result, people seek patterns where none exist and assume the existence of unjustified causal relationships.

The gambler's fallacy is a natural consequence of this randomness bias. The gambler's tendency is the belief that when a trend is established in a random sequence (or in the market, for that matter) that the trend will change at any time. Thus, after five consecutive up days in the market we expect a down day.

When you understand what's involved in winning, as do professional gamblers, you'll tend to bet more during a winning streak and bet less during a losing streak. However, the average person does exactly the opposite: They bet more after a series of losses and less after a series of wins.

Ralph Vince<sup>6</sup> once did an experiment with 40 Ph.D.'s. They were asked to play 100 trials of a simple computer game in which they would win 60% of the time. They were each given \$1000 in play money and told to bet as much or as little as they wished on each of the plays. None of the Ph.D.'s knew about money management.

How many of them made money? Only two of the 40 participants had more than their original \$1000 at the end of the game — or 5%. Yet, if you bet a constant \$10 per bet, you would end up with about \$1200. And if you had bet using an *optimal f* approach (not advocated), you would end up with about \$7,490 (on average).

What happens? The participants tend to bet more after an adverse run and less after a favorable run. Let's say the first three bets are losers and you bet \$100 each time. Now you are down to \$700. You think, "I've had 3 losses in a row and the odds are 60% in my favor, I'm sure it's time for a win." As a result, you bet \$400. What happens? Another loss. Your stake is down to \$300 and your chances of making it back are almost non-existent.

Basically, this bias enters into how most people develop trading systems. They totally ignore the randomness element. Thus, they don't even consider money management as part of their system.

**7. Need to Understand.** The last important bias, with respect to how people develop systems, is the need to understand. We basically want to know why the market does what it does. To meet this need, we develop elaborate theories to explain how the markets work.

One of my clients, Joe, claimed that he had the most difficulty with the market when he got into a position and didn't understand what was going on. As a result, I asked him a number of questions. "How often are your positions winners?" His response was that he was right about 60% of the time. "When you don't understand what's going on, how often do you come out a winner?" This time his response was that he almost never came out a winner when he didn't understand. I then said, "Since your system isn't much above chance, you probably don't understand that much about the markets anyway. But when you clearly are confused, you should just get out." He agreed it was probably a good idea.

When you think about Joe's trading system, however, he really didn't have one. Why? Joe was so concerned about understanding that he didn't have clearly defined exit signals that told him 1) when he was wrong so he could get out and 2) when to take his profits.

Most people still need to make up elaborate theories about what is going on in the markets. The media is always trying to explain the market even though it knows nothing about the market. As I was working on this update, a 91.52 point drop occurred in the Dow. The next day the newspapers were filled with statements like:

*"Investors, spooked by prospects of an economic slowdown, switched en masse Tuesday to what's become an alluring bond market. The stock market sell-off was accelerated by computerized program trading.... Money managers are making a major shift all at the same time, that's why we're seeing such a heavy surge now. When it fell, it triggered a rush of computerized selling.... Wall Street now believes that the latest Fed rate increase will slow the economy. That's good news for the bond market, which hates inflation because it erodes the value of fixed-interest bond payments. But it's bad news for stocks. There's a growing perception that maybe the rising rates we've had could have an impact on the economy, which could lead to some corporate disappointments."*

The need to understand bias becomes even more elaborate when it comes to trading system design. People manipulate daily bars in any number of strange ways and then develop strange theories to explain the market based upon those manipulations. The resulting theories then take on a life of their own, but have little basis in reality. For example, what is the rational basis for Elliot Wave Theory? Why should the market move in three legs one way and two legs the other?

## **Biases that Affect How You Test Trading Systems.**

Our next set of biases affect the testing of trading systems. Most people never encounter these biases because they never get to the point of testing systems. Thus, the conservatism bias (See Bias #5) would stop most people from ever testing a system. And more importantly, most people never get to the point where they even have a testable system.

However, when people get to this point, the result of such biases can be insidious.

**8. Degrees of Freedom Bias.** A degree of freedom is a parameter that yields a different system for every value allowed. For example, a moving average based on 10 days will yield different results than a moving average based on 24 days. Thus, the number of days in a moving average represents one degree of freedom. People tend to want as many degrees of freedom as possible in their systems. The more indicators you add, the better you can describe market prices. The more degrees of freedom you allow yourself to have, the more you are likely to get a system to fit itself to a series of prices.

System development software (most of it, that is) really encourages this bias. They provide software that allows people to optimize to their heart's content. Eventually, you end up with a meaningless system that makes a fortune on the data from which it was obtained. Give a system developer enough leeway and that person will have a system that perfectly predicts the moves in the market and makes thousands of dollars — on paper with certain historical markets, that is.

It seems that no matter how much traders and investors learn about the dangers of over-optimization,

they still want to do it. Nevertheless, I strongly recommend that you not use more than four or five degrees of freedom in your system. Thus, if you use two indicators (one degree of freedom each) and two filters in your complete system, that's probably all you can tolerate.

**9. Post-Dictive Error Bias.** People use post-dictive errors when they use information in their testing that would only be available after the fact. If you use the closing price on a particular day in your calculations to decide what to do about a trade prior to the close, that's a post-dictive error.

This kind of error is very common in system testing. They are easy to make. For example, in some software, unless you are careful, you can use today's data in your testing — which is always a post-dictive error. In fact, sometimes these errors are quite subtle. Since the highest prices in your data are nearly always followed by lower prices, for example, it's quite possible to sneak high prices into a trading rule so that the rule works great — but only post-dictively.

When you are testing data, if your results seem too good to be true, they probably are. You probably got those results through post-dictive errors.

**10. Not Giving Yourself Enough Protection.** When you design a system, your goal should be to design a system that produces low-risk ideas. My definition of a low-risk idea is:

*A methodology with a long-term positive expectancy and a reward (overall return) to risk (maximum peak-to-trough drawdown) ratio with which you can live. That methodology must be traded at a risk level (usually based upon percentage of equity) that will protect you from the worst possible conditions in the short run while still allowing you to achieve the long-term expectancy.*

Most people cannot, and do not, anticipate all possible situations that might happen to affect their systems. Consequently, in any worthwhile trading or investing methodology, you must have all kinds of backups to protect you when you're in a bad trade.

Most people who write articles for trading and investment magazines are people who have products and services to sell. In a few instances when a great trader has written an article for such magazines, that person tends to emphasize risk control in the content. Most people totally ignore that advice, because they don't have enough money to trade with.

If you ask the average person, How will you get out of a bad trade if it really goes against you? , they have no idea. Most people just don't have the backup protection they should have. More importantly, they trade at way too high a level. If you have \$50,000 and are trading five or more different commodities, then you are probably trading at too high a risk level. That risk level may get you high rates of return, but it will eventually bankrupt your account.

### **Biases That Affect How You Trade Your System.**

Let's assume that you have gone through a system, thoroughly tested it, and determined it to be something you can trade. Unfortunately, there are still more biases — biases which tend to cause people to override their systems.

People want maximum performance, so there is always a temptation to override your trading system.

The few times you do something to override your system and improve your performance that work really stand out in your mind. However, you tend to forget the times that don't work and the day-in, day-out slippage that affects your bottom line.

If you don't have a trading system, then numerous biases affect your trading. However, two key biases come into play even when you have the best of systems. Let's take a look at these biases that tend to cause people to override their systems.

## 12. Conservative with Profits and Risky with Losses

Perhaps the number one rule of trading is to cut your losses short and let your profits run. Those who can follow this simple rule tend to make large fortunes in the market. However, most people have a bias that keep them from following either of these rules.

Consider the following example in which you must pick one of two choices:

Which would you prefer 1) a sure loss of \$9,000 or 2) a 5% chance of no loss at all plus a 95% chance of a \$10,000 loss?

Which would you prefer 1 or 2?

Now, consider another example.

Which would you prefer 1) a sure gain of \$9,000 or 2) a 95% chance of a \$10,000 gain plus a 5% chance of no gain at all?

Which would you prefer 1 or 2?

Which did you pick — the sure loss or the risky gamble? Approximately 80% of the population picks the risky gamble in this case. However, the risky gamble works out to a bigger loss (i.e.,  $\$10,000 * 0.95 + 0 * 0.05 = \$9,500$ ), and violates the key rule of cut your losses short. Yet most people continue to take the gamble, thinking that the loss will stop and it will turn around from here. It usually doesn't. As a result, the loss gets a little bigger and then it's even harder to take. And that starts the process all over again. Eventually, the loss gets big enough that one becomes forced to take it. Many small investors go broke because they cannot take losses.

In the other example, did you pick the sure gain or the risky gamble? Approximately, 80% of the population picks the sure gain. However, the risky gamble works out to a bigger gain (i.e.,  $\$10,000 * 0.95 + 0 * 0.05 = \$9,500$ ) and it violates the second part of the key rule — let your profits run.

People, once they have a profit in hand, are so afraid of letting it get away that they tend to take the sure profit at any sign of a turnaround. Even if their system gives no sell signal, it is so tempting to avoid letting a profit get away that many investors and traders continue to lament over the large profits they miss as they take sure small profits.

These two common biases are well stated in the old saying: *Seize opportunities but hold your ground in adversity.* The good trader had better use the adage: *Watch profit taking opportunities carefully, but run like a deer at the first sign of adversity.*

### **13. My Current Trade/Investment Must be a Winner.**

What makes all these problems come to the forefront is the overwhelming desire of human beings to make current positions (those you have right now) work out. What happens? First, when you have a losing position, you'll do anything to nurse it along, hoping it will turn around. As a result, losing trades tend to become even bigger. Second, profits are taken prematurely in order to make sure they remain profits.

Why? People have an overwhelming desire to be right. Over and over again, I hear traders and investors tell me how important it is for them to be right when they make a market prediction or, even worse, when they invest their money in the market.

I recently worked with a client who publishes a daily fax which gives predictions for a particular commodity. Big traders all over the world subscribe to his fax because his accuracy is outstanding. He's known world-wide for that accuracy. However, despite the fact that his accuracy is outstanding, his ability to trade that commodity is rather poor. Why? Because of the need to be right. Once a person makes a prediction, the ego becomes involved in it, making it difficult to accept anything that happens in the process of trading that seems to differ from your prediction. Thus, it becomes very difficult to trade anything that you publicly predict in any way.

### **How To Improve Your Market Performance Despite These Biases:**

If you follow certain rules and guidelines, you can make a lot of money in the markets. In fact, when you follow these rules, the odds are in your favor because most people are still having a problem with the biases I have discussed.

Here are some rules that will give you a head start.

- 1) First, spend a lot of time thinking about your objectives. How much money do you have? How much are you willing to risk before you call it quits? What's a reasonable rate of return you're willing to make? What is the maximum peak-to-trough drawdown you are willing to tolerate? These, plus a thousand other similar questions, should be answered before you even start the process of developing a system.
- 2) What data are you trading and how are you representing the market in that data? What are you ignoring in the process? If you give some thought to this process, then you are ahead of most traders. If you break the mold and represent the markets differently, then you are way ahead of most traders.
- 3) What is the concept in the market you plan to trade that will give you an edge? What are all of the assumptions you are making with respect to that concept? Are you trading standard indicators that everyone else uses or something you developed yourself? And whether your indicators are new or not, do you understand them?
- 4) Is your concept simple? Simple concepts are much more likely to make money, in my experience, than complicated ones.
- 5) Do you know when you are wrong in your trading system? Are those rules clearly defined?



- 6) What safeguards are built into your system to keep you out of trouble? Have you thought about what could happen and what to do in those cases?
- 7) Do you have money management as part of your system? Money management is the key concept in risk control and you must take it into consideration. In my opinion, if your money management rule is simply trade one contract, then either you don't understand money management or you are not trading enough money.
- 8) Make sure your system is fairly simple. Make sure that you use, at most, two indicators plus two filters. If you use more, you may have over-optimized.
- 9) If your results are too good to be true, then you probably have post-dictive errors in your systems that you will need to find and eliminate.
- 10) Lastly, when you test your system, determine the probabilities of your system. What's your average gain? What's your average loss and what's the gain to loss ratio? What's the average percentage gain each year (and what's the range of gains?) What is the maximum peak-to-trough drawdown you can expect? What's the reliability of your system? How many losses can you expect in a row during 1000 trades? When you trade based upon this information, your job just becomes one of making sure you follow your system and that your system parameters fall within the ranges of your testing.

## Reference Notes

1. These statistics were quoted in a great book called *Quantum Psychology* by Robert A. Wilson. Phoenix, AZ: New Falcon Publications, 1990. Because technology has gotten way ahead of information, we've decided to offer a new seminar entitled *Obtaining Your Maximum Potential as a Trader /Investor* on Feb 3-5th. See page 6 for more details on this new seminar.
2. See Vol 5 of my *Peak Performance Course for Traders and Investors* for a thorough discussion of this particular bias.
3. Tom DeMark has recently defined a long-term trend by the size of the move as opposed to the time duration of the move. Thus, a long term trend is one that moves 15 % or more — rather than one that lasts more than a certain period of time. See *The New Science of Technical Analysis*. New York: Wiley, 1994.
4. See Jack Schwager, *The New Market Wizards*, William Eckhert: *The Mathematician*. New York: Harper Collins, 1992, p. 103-136.
5. *Market Wizards Panel* with Tom Basso, Ed Seykota and Van Tharp. Convened at the Technical Securities Analyst's Association in San Francisco during November 1993.
6. C. LeBeau (Editor). The Ralph Vince Experiment. *Technical Trader's Bulletin*, March, 1992, p. 1-2.

## Videotape Library

The ATAA has established a collection of videotapes that members may borrow. The videotapes are in VHS format and are available for loan to ATAA members free of charge. Members are only asked to pay the postage to return them promptly when they have finished watching them.

In order that the maximum number of members may take advantage of the library, they are asked to view each tape and return it within one week. Members taking too long to return video tapes may be dropped from the waiting list for further borrowings.

We lend these videos on a type of first-come-first-served basis and maintain a waiting list. While we will place you on the waiting list for more than one video tape, you will only ever be sent one at a time.

Members who have not received a videotape before are placed at the top of the list and will receive the next video that is returned to the library and was ordered by them. That member's name then drops to the bottom of the list and he/she will not be sent another video until his/her name works its way to the top of the list again.

This system ensures that all members experience a similar waiting period (currently 6 to 8 weeks) between videos, depending upon the demand. However, it also means that the order in which members receive their selections will be random, depending upon which video next comes back when their name is at the top of the list. However, members ordering Elder: "Technical Analysis in 52 Minutes" or Pring: "Principles of Technical Analysis" will be sent those tapes first, if they so request. This may delay receipt of the first tape, however.

The tapes currently available for loan are:

Schwager: What it Takes to be a Great Trader  
Elder: Technical Analysis in 52 Minutes  
Elder: MACD and MACD-Histogram  
Elder: Relative Strength Index (RSI)  
Appel: Day Trading with Gerald Appel  
Elder: Directional System  
Elder: Triple Screen Trading System  
Elder: Elder Ray  
Elder: Stochastic  
Elder: Williams %R  
Elder: Psychology of Trading  
Plummer: Forecasting Financial Markets  
Pring: Basic Principles of Technical Analysis  
Pring: Price Patterns  
Pring: Support, Resistance, Trendlines & Moving Averages  
Pring: Momentum, Relative Strength and Volume  
Pring: Mechanical Trading Systems & Correct Investment Attitudes  
Pring: Momentum 1 - Basic Principles of Momentum Interpretation  
Pring: Momentum 2 - Selected Indicators 1  
Pring: Momentum 3 - Selected Indicators 2  
Bierovic: How to Increase your Trading Profits with Synergy  
Bierovic: How to Synergise Oscillators with Trend Indicators  
Bierovic: How to Manage Your Account, Your Trades and Yourself  
Brise: The Inside Track to Winning (Deals with Open Interest)

Phone: (02) 634 7247, Fax: (02) 634 7772 or write to 40 Gooraway Drive CASTLE HILL NSW 2154.  
If you would like to borrow any of the videotapes, contact Chris Harris to be placed on the waiting list.

## Australian Technical Analysts Association Inc Application for Membership

First Name:..... Family Name:.....

Company ( If membership paid by a company ) : .....

Address:.....

.....State:.....Postcode:.....

Telephone:

(Business hours):.....(Evening):.....

Facsimile:.....

Do you use Technical Analysis for your trading/investing decisions ? : Yes / No

If Yes, please describe your use of Technical Analysis:.....

For our records, how did you first hear of the ATAA ? .....

Membership is by payment of annual subscription of \$100.00.

For membership purposes, our year runs from July 1 to June 30.

We do not pro rata the annual subscription for memberships beginning part way through the year. Instead, we offer two concessions:

- (1) Members joining between July 1 and December 31 receive a copy of all Newsletters published in that period.
- (2) Members joining between January 1 and June 30 are credited with the remainder of the current year free, such that their initial subscription covers membership up to June 30 of the year following the year in which they join.

For information call the Honorary Secretary, Colin Nicholson (02) 436 1610; or in other States, any of the local Committee listed inside the front cover of this Newsletter. Please mail the Application Form with a cheque for \$100 payable to Australian Technical Analysts Association Inc. to:

The Honorary Secretary  
Australian Technical Analysts Association Inc  
GPO Box 2774  
Sydney NSW 2001

## Australian Technical Analysts Association Inc

The aims of the Australian Technical Analysts Association Inc (ATAA) are:

- \* To establish personnel contacts between analysts both inside and outside of Australia with a view to promoting the theory and practice of technical analysis,
- \* To help raise the level of community awareness and respect for technical analysis,
- \* To provide meetings and encourage the interchange of materials, ideas and information in order to add to the knowledge of its members and
- \* To encourage the highest standards of professional ethics and competence among technical analysts

The ATAA is affiliated with the International Federation of Technical Analysts helping us to keep abreast of international markets and techniques.

Founded by a small group of technical analysts that met on a regular basis, the association was officially launched on 26 April 1990.

Membership is varied in employment, geography, market interest and approaches to the markets. Current members include corporate treasurers, fund managers, bank analysts and traders, stockbrokers, financial planners, private and local traders and investors. The members will be professional Technical Analysts, or people using Technical Analysis for private investing or trading.

Benefits include monthly meetings and a bi monthly newsletter, both of which provide an opportunity to learn technical analysis techniques, as well as being a forum for discussion and new ideas. In addition, members have access to a video tape library and discounts on various technical, psychology and trading courses and books.

Meetings are held in the evening each month except December and January, in Adelaide, Brisbane, Melbourne and Sydney. Sydney meetings are usually held on the third Monday of the month, and Melbourne meetings are held on the third Wednesday, dependant on the availability of speakers, rooms and public holidays or special events. Meetings in other States are held around the same time. All meetings are advised in advance by mail. Membership of the ATAA is national and members may attend meetings in any State.

Entry to meetings is free to members. Visitors are charged \$20.00 per meeting, but if they join within a month, the entry amount is deductible from the initial annual subscription.

Membership is open to anyone using technical analysis for their trading decisions, or wanting to learn how to do so. To join, complete the application form over the page and mail it to the Honorary Secretary.

For information call the Honorary Secretary, Colin Nicholson on (02) 436 1610 or in other States, any of the local Committee listed inside the front cover of this Newsletter.