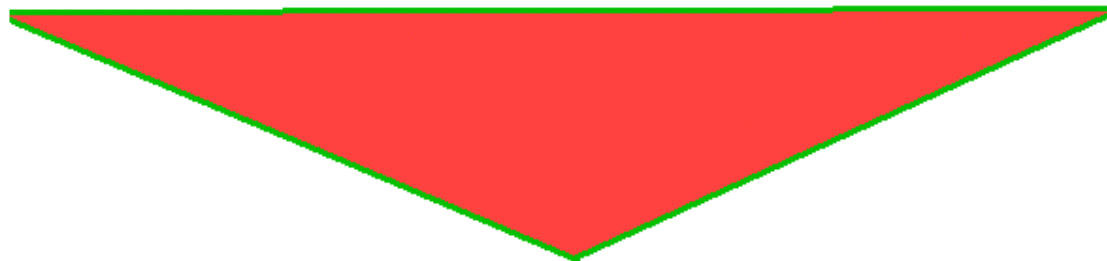


J.M. HURST CYCLE TRADING
WITHOUT THE ROCKET MATH

This work is protected under the
the Digital Millennium Copyright Act
and international law and may not be
reproduced by any means without the
express written consent of the author



This material is protected under the Digital Millennium Copyright Act of 1998 and various international treaties. This material may not be replicated and redistributed. You may make one or more copies for archival purposes if those copies are for your own use. It is illegal to email this material to any person other than yourself or to make this material available for downloading by any person other than yourself.



Eyewire/Photodisc/Getty Images

Copyright 2005. TradingFives Trading Company, all rights reserved

"Can a \$10,000 investment yield \$1 million in a year? In five years? If so, what is the risk involved?"

So begins the 1970 book *The Profit Magic of Stock Transaction Timing* written by, of all things, a physicist and career aerospace engineer. J. M. Hurst's book was remarkable in its time for a variety of reasons. Not only did Hurst's work suggest that such fantastic results as turning a \$10,000 investment into \$1 million in four years was possible, he documented the technique, and publicized the actual results of a trading demonstration which produced a yield that would have reduced the time to 15 months!

Hurst was one of the first, if not the first author of a generally available stock market book that brought the computer into the spotlight as an essential technical analysis tool. Things have changed in 30 years, and today it is difficult to imagine that any method of technical analysis that was not computerized would be taken seriously by the supposed *cognoscenti*, regardless of its merits. However, in 1970 only governments and Fortune 500 companies could afford computers. Bill Gates was still years away from dropping out of Harvard to change the world.

Even though his work is founded on scientific principles, which are explained in detail and referenced in his book, and can be easily back tested, J. M. Hurst and his work never gained the recognition they deserve. Perhaps one reason is the timing of the release of his original work. The decade of the 1970s was hardly a good time to be publishing books on stock market riches. The worst bear market in a generation, the OPEC oil shock, runaway gold prices, the specter of hyper-inflation, and more than a decade of vividly unspectacular performance of the major averages made the stock market something to avoid, and most people did. By the middle 80s when Happy Days were here again for the stock market Hurst's book had been seemingly outmoded by the trading techniques of the new technology. Although relatively expensive by today's standards, personal computers were still affordable and widely available in 1982. Stock and commodity traders latched onto personal computers for the oscillator wizardry and splashy color graphics that could be done in minutes instead of hours. An entire industry grew from the demand traders had for more indicators and better graphics.

The Profit Magic of Stock Transaction Timing remains in pretty much the same state of non-recognition as it was in the 80s. Although you will see J.M. Hurst's name mentioned now and then in stock market discussion groups, the advantage of his work remains unknown and thus out of the reach of the average trader. We all may have the equivalent of a third generation Cray on our desktops today, but the number of people who can whip out Easy Language code for solving simultaneous linear equations is still limited. It may be worthwhile to know that one of the references that Hurst listed in the bibliography is titled "*Recursive Multivariate Differential-Correction Estimation Techniques*," a technical memorandum published by Bell Telephone Laboratories (now Lucent) in 1964. A reference like that does not inspire enthusiasm in the mathematically challenged.

People who heard enough about Hurst and his work to investigate further were seemingly left with but two choices at the end of the inquiry, to gain the mathematical and programming skills necessary to apply the full method, or to pay for somebody else's expertise. We fully encourage the first. The second is a matter of personal choice. J.M. himself said "the results are yours if you care to apply yourself with sufficient intensity."

That brings us to the purpose of this work. While we absolutely encourage every reader to read all of the *Profit Magic of Stock Transaction Timing* we believe that there is a kernel of Hurst's method within Chapter 6 that anybody with minimal computer skills can apply to his trading without the need for rocket math or reeducation in college algebra and trigonometry.

WHAT IS HURST'S BOOK REALLY ALL ABOUT?

The core principle in the *Profit Magic of Stock Transaction Timing* is that profitable short term trades will produce investment yields far beyond any buy and hold strategy that doesn't include being a founding stockholder of the next Microsoft. That may seem obvious but if you ask ten people who have read the book what they think the book is all about, at least eight of them will tell you that the book is about finding cycles in the stock market. If you happen to come across a discussion of Hurst methods on the Internet,

chances are the topic will be about the value of this or that technique for reducing the lag of a moving average, or this or that technique for detrending stock data. While these topics may have value in their own right they are only about the process of transforming data. You do not make money with data, you make money with information. They completely miss the part about “profit magic” which is all about how to use the information.

In 10 pages of Chapter 6 Hurst provided us with the essential tools necessary to bypass much of the cycle learning process and allow us to cut right to the heart of the matter, which is increasing the odds of making the greatest number of profitable trades in the shortest amount of time without any daytrading. J.M. Hurst never knew about TRADINGFIVES but he seemed to anticipate us as Chapter 6 is the only place in the book where Hurst talked of his readers “generating variations and whole new methods.” With the exception of our own site, TRADINGFIVES.COM, we are not a familiar with any Internet site, book, or article that focuses on what we call the Hurst method, or the techniques we will show you in this work.

FROM DATA TO INFORMATION (PART I)

Because we are seeking to demonstrate a method that is capable of producing the greatest number of profitable trades in the shortest amount of time without day trading, a large number of the examples in this book use Hourly data. The chart illustrations in Hurst's book were primarily weekly data samples. The Hourly data of the major US stock indexes for the periods sampled in this book produced trades of about four to fifteen days duration.

Hourly data is readily available from any number of on-line sources. www.quote.com has a \$9.95/month service with a feature to export several intraday time frames to Excel. You can also get 5 minute interval stock files at moneycentral.msn.com for free. You have to download manually and jump through a few hoops at msn to get the data in useable condition but it is available. We cover other historical data downloading choices and data formats for the training software in more detail in the Appendix.

The displaced moving average technique is not limited to trading with Hourly charts. The technique is equally applicable across all time frames. However, Hourly charts do make an excellent training vehicle if for no other reason than things happen six times faster than with daily data.

Many charts in the book are drawn in Excel so any reader with access to a computer, historical data, and a spreadsheet can reproduce these results. We have also added many End-of-Day (EOD) charts prepared with the training software that is available with this book.

A FEW WORDS ABOUT CYCLES

The first chart illustration shows 270 Hourly data points of the SPX comprising about 45 days of trading (July 31, 2003 – September 24, 2003). Let's call this chart the "raw data." A commercial charting program would probably reproduce this data in high-low bars or candlestick format, as can Excel, but once we start adding more source data like moving averages to the Excel stock chart, maintaining the high-low bars in an Excel chart becomes too involved for the casual user. We find that high-low bar chart can be useful but not necessary to apply the techniques.

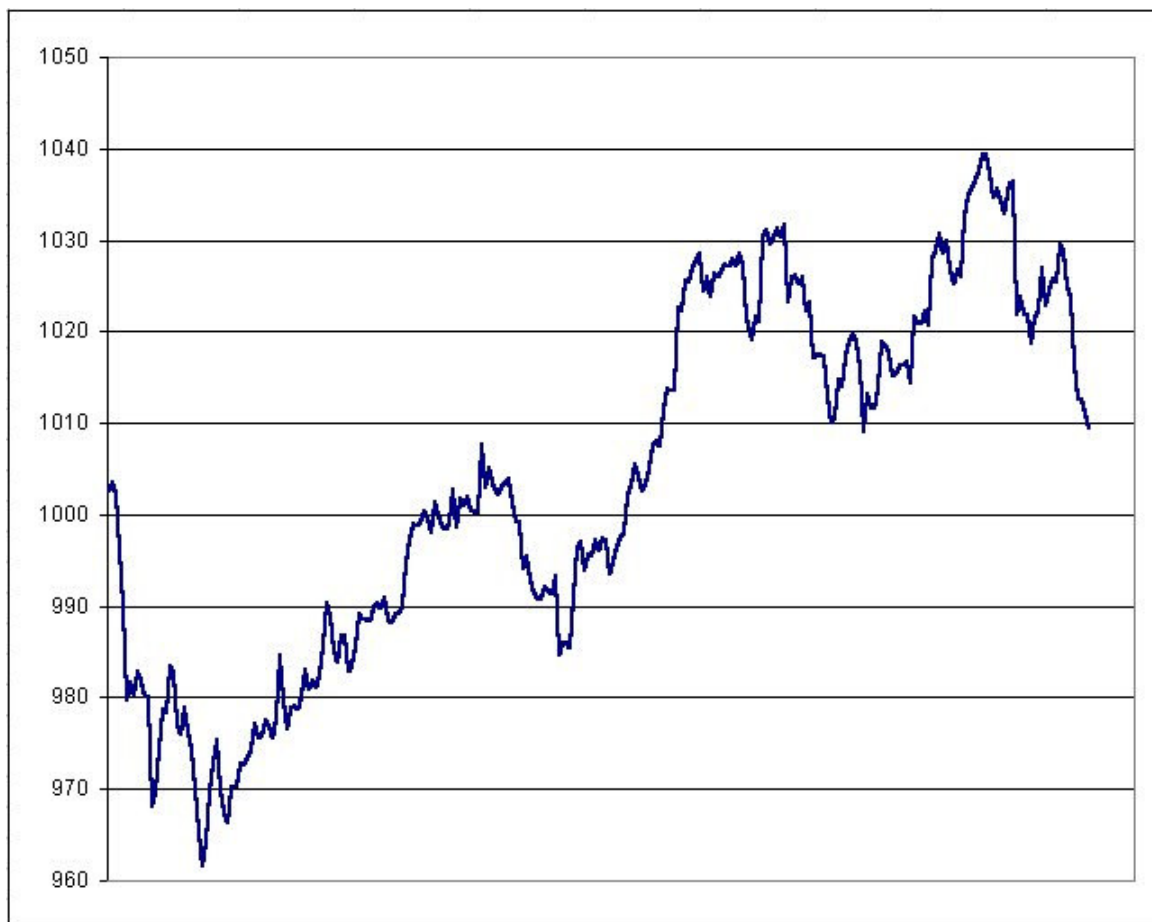


Figure 1

In Figure 1 you can see at least two distinct bottoms and a third in process. The distance between the first two bottoms is about 85 and 72 bars respectively. Traditionally, cycles are measured from low to low and they are observationally present in almost every stock chart you will ever see. We are going to commit heresy here, so be prepared. This work

is not about finding all the dominant cycles in stock market data. That may be a worthy venture in its own right but we do not need to do that to benefit from our adaptation of Hurst's work.

Most cycle analysis goes something like this: *The X cycle is hard up and will be peaking over the next few ___. The Y cycle bottomed on ___ and is now in the early stages of an up phase which will contribute to the X cycle's effect offset by the Z cycle which turned hard down on ___.*

Some people are better at interpreting this kind of data than others. Most find it confusing, especially when different cycles are in conflicting phases or when they invert as happens from time to time.

We cannot avoid the traditional approach to cycle analysis altogether but we can simplify the process significantly by focusing our attention only on one dominant cycle.

The nominal durations of the principal cyclic components derived by Hurst for the major US stock indexes are:

Years	Months	Weeks
18		
9		
4.5		
3.0		
1.5	18	
1.0	12	
.75	9	
.50	6	26
.25	3	13
	1.5	6.5
	.75	3.25
	.375	1.625

Ray Tome has done some valuable, original work on cycles. His website is <http://ray.tomes.biz>. Definitely worth a visit. His research on harmonic families is of particular interest. Tomes determined the existence of harmonic families that may make ideal displaced moving average periodicities, although Tomes himself never mentions displaced moving averages. Our reading suggests that the most relevant harmonic families for our purposes are periodicities of 12-24-48 and 18-36-72-144-288.

HOW DO YOU DETERMINE THE DOMINANT CYCLE?

You can determine the dominant cycle from observation. As we did in Figure 1 pull a stock chart of the time frame you will be trading in and count the number of bars from low to low to low and average them. The trading software has a feature that allows you do just that. A left click on the first low followed immediately by a right click on the second low shows a dominant cycle of about 138 bars on the INTC daily chart.



For more observations you can expand the number of bars in the chart by clicking on the left arrow or by pressing the + key on the numeric keypad.

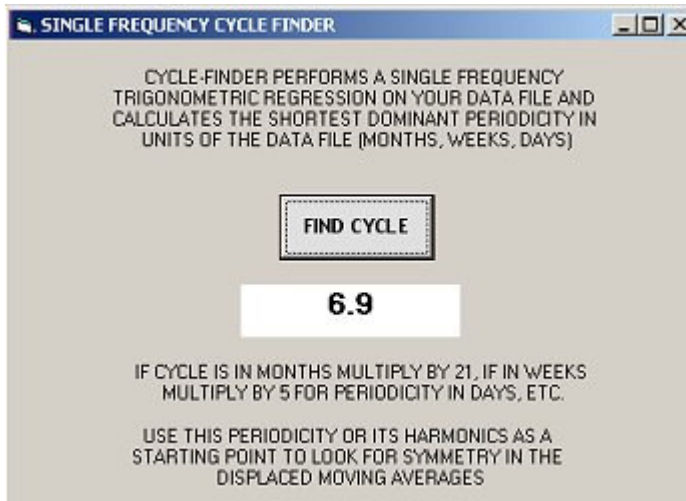
Observation of cycle lows in the time frame in which you are trading is quick and dirty

but is also effective.

The training software has a Cycle-Finder feature that helps to automate the process of determining the dominant cycle. Cycle-Finder performs a single frequency trigonometric regression on the detrended data of an entire file. That sounds fancy but the net effect is about the same as counting low-to-low. Cycle-Finder finds the *shortest* dominant periodicity in the file so to be useful you have to use Cycle-Finder on a longer time frame than the one you will be trading. The next illustration shows a monthly INTC data file.



We determined the shortest dominant cycle in the INTC monthly chart by clicking on Cycle-Finder on the menu bar at the top of the training software main window and Find Cycle in the Cycle-Finder window. This is the result.



Cycle-Finder determined a dominant periodicity of 6.9 months in the INTC monthly data file. Since our trading time frame in this INTC example is daily, and there is on average 21 trading days in a month, we multiply the monthly Cycle-Finder result by 21 to determine a daily periodicity of 145 days. Just about the same as the 138 days we got by counting low-to-low in the daily chart.

Generally Cycle-Finder seems to work best when you use it with a time frame that is two or more times greater than the time frame in which you will be trading, such as Monthly-Daily in the INTC example. Just remember to convert periodicity from the longer time frame to the shorter: monthly x 21 for daily, weekly x 5 x 6.5 for hourly, etc. If the result is not satisfactory to get symmetrical charts for your trading time frame (as we will explain) then double or half the result as is appropriate in the circumstances.

APPLYING THE DOMINANT PERIODICITY

In the Excel chart in Figure 1 the two dominant cycle lows were counted by observation at 85 and 72 bars, yet many of the SPX Hourly examples in this book use a longest period displaced moving average of 91 bars. After having done about a thousand of these SPX Hourly charts that we do not show we became comfortable that a periodicity of 91 for the longest moving average on an SPX Hourly chart provided consistently reliable results and seemed to work the best for us because we were comfortable in the 5-15 day window that these charts provided.

Generally, you will want to use this dominant periodicity as the longest of the three displaced moving averages you will calculate and apply in the technique. The shortest periodicity will be about 1/3 of the longest and the middle periodicity approximately in the middle of the longest and shortest.

If you have read *Profit Magic* you will immediately see another bit of heresy here. Hurst always used only two displaced moving averages in his chart illustrations, and he always calculated the shorter displaced moving average as 50% in periodicity of the longer displaced moving average. Hurst the scientist provided the proofs and the mathematical foundation for his work whereas our alternate approach is based entirely upon empirical evidence through observation.

Happily this is not an either/or situation. We provide illustrations of both approaches. The training software encourages you to experiment for yourself. You can plot any chart in the training software with either two or three displaced moving averages, and you can use either 1/2 (as Hurst did) or 1/3 proportions in any combination.

The following illustration shows where those commands are located in the main window of the training software.



One more bit of administrative clarification before moving on. J.M. Hurst used closing prices of weekly stock data to compute the simple moving averages for the illustrations he used in *The Profit Magic of Stock Transaction Timing*. We use the $(\text{high} + \text{low}) / 2$ rather than the closing prices in our moving average computations because we consider the midpoint a better representation of a bar than the close alone. In most cases the difference is not mission critical and you can use either approach in your own applications.

FROM DATA TO INFORMATION (PART II)

The second process stage of the displaced moving average technique is transforming the chart of raw data into useful information. We accomplish that by adding three displaced moving averages to the data chart. The displaced averages are selected in odd numbers (i.e. 31, 61, 91) so that they can be plotted on the Excel chart at the proper offset from the most current price. That offset is always $\frac{1}{2}$ the period of the average rounded up to the next even number when plotting your data in Excel. The offsets for moving averages of 31, 61, and 91 bars are 16, 32 and 46 bars respectively.

This is what the raw data chart looks like with the displaced moving averages plotted $\frac{1}{2}$ period behind the stock prices.



Figure 2

You can see immediately that adding the displaced moving averages and plotting them 1/2 period behind the stock prices added symmetry to the raw stock prices. The genius of J.M. Hurst was figuring out how and why that symmetry is not accidental, but is reproducible over and over again. You can get an immediate sense of the power and simplicity of the displaced moving average technique.

FROM INFORMATION TO KNOWLEDGE

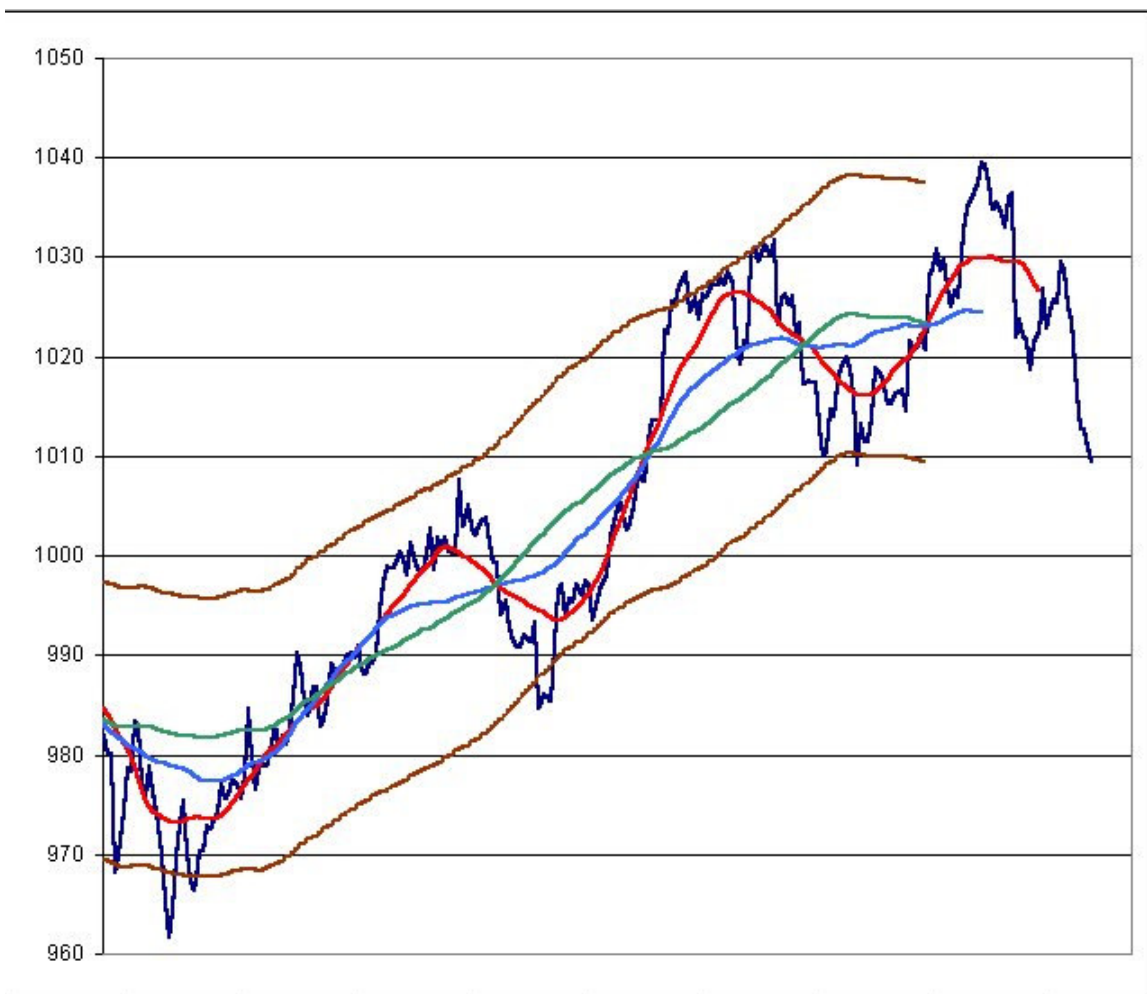
Many computer traders tend to treat moving averages like they were teenagers driving on a learner's permit – suffer through it only until you get enough experience to move on to the “real” stuff.. That is a mistake. Hurst spent a good amount of time in his book explaining the characteristics of moving averages and why a simple moving average offset $\frac{1}{2}$ its period provides so much unique and useful information. Moving averages come in many flavors: exponential, weighted, and geometric to name a few. Hurst used only simple moving averages and for a very specific reason –a simple moving average offset by the proper amount will visibly extract trending and cyclical data from stock prices. A single data point of a simple moving average is the sum of the number of stock data points constituting the average divided by the period of the average. Each data point in a 10 day simple moving average of closing prices, for example, is the sum of 1/10 of each of the immediately preceding 10 closing prices.

By adding the displaced moving averages to the raw stock the Excel chart has been transformed into information from which we can acquire knowledge. The displaced moving averages are fairly estimating the trending and cyclical components of the stock prices, which oscillate in approximately equal moves above and below the averages. You can see this symmetry in the SPX Excel chart.

More importantly, because this symmetry is not coincidental but is derived from the underlying mathematical principles of Hurst's price-motion model it will repeat for as long as the earth orbits the sun. You can transform this information into knowledge about the most likely direction, time and travel of future stock prices. So long as the stock or index you are tracking moves up and down with some fair amount of volatility, and does not go sideways for long periods, you can continue to extract trading knowledge from this

technique with very little computational effort.

Once the initial chart is set up and the displaced moving averages have been plotted you can continue to add layers of information to the chart. The next example shows the same chart with the addition of envelopes. Hurst considered envelopes an important element of his price-motion model. Almost every sample chart in his book was drawn with an envelope. The envelopes do add valuable visual information and that's the reason we spend time on describing how to draw them. Envelopes are not necessary, however, to apply the displaced moving average techniques we cover in this work.



The envelopes are plotted two standard deviations from the longest period moving average. The standard deviation calculation for the envelopes can be performed quickly in Excel with the STDEVP function. In a new column subtract the value of the longest period moving average from the high of each corresponding bar on the same row. The

negative values will be squared in the standard deviation calculation producing positive values so do not be concerned about them. In an adjoining column subtract the low of the Hourly data on the same row from the longest period moving average. Use these two columns of data for the input to the STDEVP function and you will get the standard deviation for all the stock data shown on the chart relative to the position of the longest period moving average. These columns are not plotted in the main chart and you could eliminate them after the standard deviation calculation is completed.

You can add the two standard deviation envelope to the Excel chart by creating two new columns adjoining the last moving average column, adding and subtracting two standard deviations from the longest period average, and adding the new source data to the chart. An envelope constructed from two standard deviations should enclose almost all the stock data within a smooth channel. If the envelope is not smooth – as much like a straight line as possible – or if large amounts of data are outside the envelope you would want to consider using different period moving averages.

1654	DATE	TIME	OPEN	HIGH	LOW	CLOSE	11 PERIOD AVG	
1655	4/15/2005	16:00	1162.05	1162.05	1141.92	1142.62	1161.219	
1656	4/18/2005	16:00	1142.62	1148.92	1139.8	1145.98	1157.937	
1657	4/19/2005	16:00	1145.98	1154.67	1145.98	1152.78	1155.393	
1658	4/20/2005	16:00	1152.78	1154.82	1137.02	1137.5	1153.023	
1659	4/21/2005	16:00	1137.5	1159.95	1137.5	1159.95	1151.238	
1660	4/22/2005	16:00	1159.95	1159.95	1143.74	1152.12	1151.095	
1661	4/25/2005	16:00	1152.12	1163.11	1152.12	1162.1	1150.821	5
1662	4/26/2005	16:00	1162.1	1164.75	1151.74	1151.74	1151.419	4
1663	4/27/2005	16:00	1151.74	1159.7	1144.55	1156.38	1152.987	3
1664	4/28/2005	16:00	1156.38	1156.38	1143.22	1143.22	1154.635	2
1665	4/29/2005	16:00	1143.22	1156.85	1139.33	1156.85	1157.077	1
1666	5/2/2005	16:00	1156.85	1162.34	1154.77	1162.16	1160.597	← 1
1667	5/3/2005	16:00	1162.16	1166.04	1157.19	1161.17		1
1668	5/4/2005	16:00	1161.17	1175.72	1161.17	1175.65		2
1669	5/5/2005	16:00	1175.65	1178.28	1167.29	1172.63		3
1670	5/6/2005	16:00	1172.63	1176.84	1170.76	1171.35		4
1671	5/9/2005	16:00	1171.35	1178.84	1169.64	1178.84		5
1672								

Figure 4

The above illustration shows how to create a properly offset displaced moving average

in Excel. The formula that appears on Row 1666 (at the red arrow) is `=AVERAGE(D1671:E1661)`. The formula creates an 11 period moving average of the high-low starting from the most recent data point. The first moving average cell is offset from the most recent data point by six rows. That leaves five data points ahead of it and five data points behind it for an 11 period moving average. The quick rule for determining how many rows to use for the offset is $1/2$ the period of the moving average rounded up. $11 / 2 = 5.5$ which rounds up to 6. The first location for the moving average formula is offset 6 rows from the last stock data point.

People new to this displaced moving average technique tend to use very short period moving averages assuming that they will catch shorter and shorter swings or achieve better timing. Theoretically that is probably true. Experiment by all means, but we have found that the best results (for us) are achieved by selecting a group of moving averages that provide both a smooth channel and a visible separation between the plots of the averages themselves. This technique should not be expected to provide an exact entry or exit price like a Square of Nine projection might. What it will provide more often than not is a solid and narrow price zone in which you can reasonably anticipate a short-term change in trend or significant support or resistance relative to the time frame of the bars being traded.

APPLYING THE DISPLACED MOVING AVERAGE TECHNIQUE

The charts used as illustrations in this book are produced either in Excel or in our own software. The most important element of displaced moving average technique is the properly plotted displaced moving averages themselves which can be reproduced in any commercial charting program that allows you to negatively offset moving averages.

So while your results will differ in appearance with a chart done in Tradestation or Metastock the underlying principles remain the same. The results are entirely independent of the computer program which may produce them. We mention that because we do not expect you to limit your use of the displaced moving average technique to the training software. The displaced moving average technique can be easily integrated with your favorite oscillators, Fibonacci clusters, or even Elliott Wave patterns to help pinpoint high probability turning points.

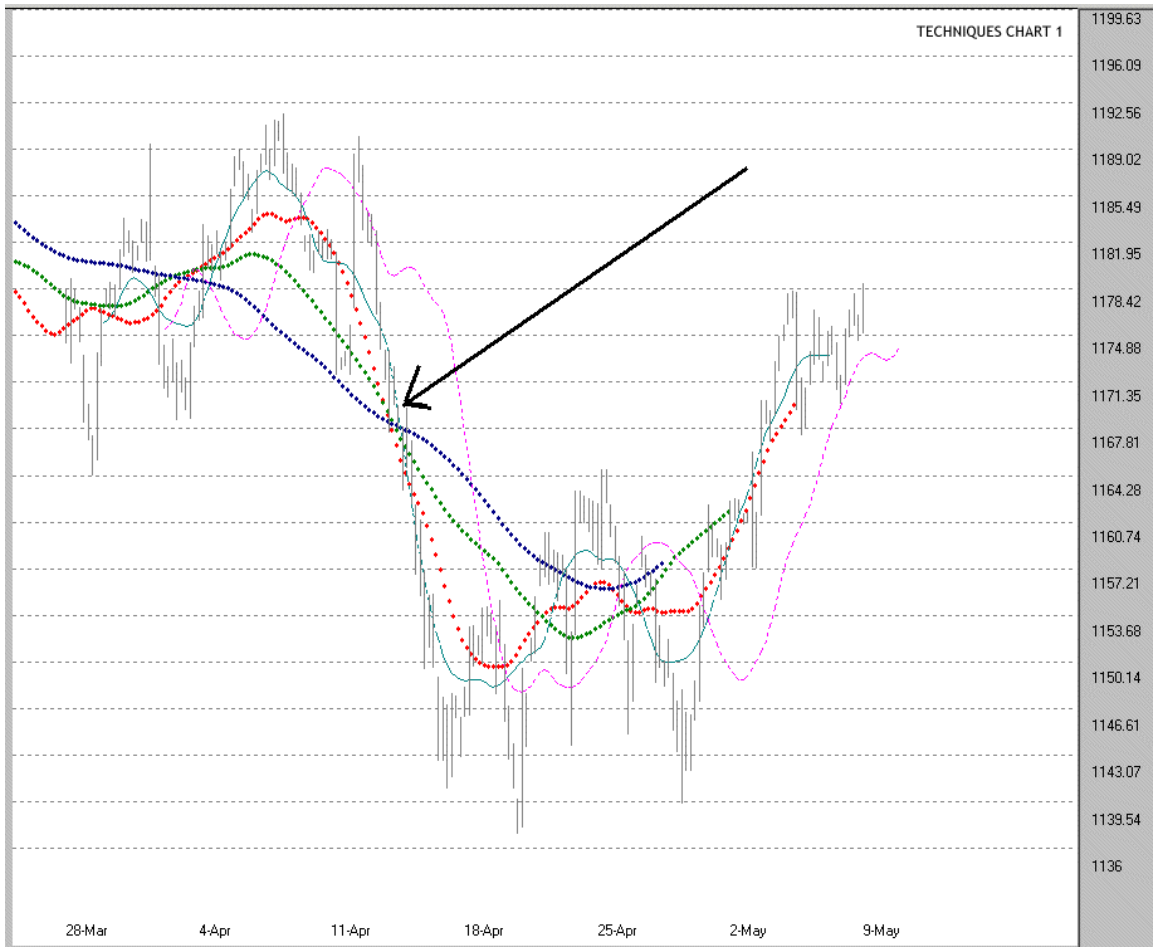


Figure 5

Figure 5 is an example of how you can customize the technique for integration into your charting routine. Figure 5 has more than three displaced moving averages plotted. The major displaced moving averages are the Blue (91 bars offset -46 bars), Green (61 bars offset -32 bars) and Red (31 bars offset -16 bars). Rather than refer to the numerical periodicity of the displaced moving averages we will call them the Blue, Green and Red displaced moving averages. The light blue and magenta averages are used for fine tuning and will be explained later.

Focus on where the arrow is pointing in Figure 5. It points to the intersection of the Blue, Green and Red displaced moving averages. It so happens that the intersection of the Blue, Green and Red displaced moving averages is smack at the midpoint of a down swing that lasted from early April, 2005 to mid-April, 2005 or well within our expected

time frame of about 5-15 days.

There's nothing special about this chart. It's an Hourly chart of the SPX and it just happened to be the last one saved to disk at the time. What is special, however, is the knowledge that the intersection of the Blue, Green and Red displaced moving averages will almost always point smack to the midpoint of both up and down swings that last about the same period as the displaced moving averages.

The symmetry among the Blue, Green and Red displaced moving averages gets lost in shorter swings as evidenced in the double bottom formed around April 18 and April 25. If you look closely at the chart, however, you can see that the Green and Red displaced moving averages did intersect at about the midpoints of the small duration swings. The light blue displaced moving average we mentioned in the opening paragraph is half the period of the Red displaced moving average and can be used as a vernier to help project the intersections of the longer period displaced moving averages. The magenta line is a 13 period simple moving average and is offset forward by 8 bars. The magenta line is not part of the Hurst method and J.M. Hurst never suggested this addition in *Profit Magic of Stock Transaction Timing*. Some find the magenta line useful for confirming breakout tops or bottoms or for use as a mechanical stop.

Let's review what we covered in the last two paragraphs. It is the most important single concept of the displaced moving average technique. The three displaced moving averages when offset by 1/2 their periodicity will almost always intersect at the midpoint of an up or down swing that lasts within the range of the same periodicity as the displaced moving averages. If you run want to run slightly ahead you can see where this is going. If you can successfully project where the three major displaced moving averages will intersect in the future then you will also successfully project the price at which the current swing will end or meet major resistance or support.

What's the best way to project where the three major displaced moving averages will likely intersect? In the spirit of always keeping it simple, the answer is with a straight line drawn from the first point where the displaced moving average starts to change direction and straighten out. The following chart, Figure 6, is admittedly a lay-up because the actual intersection will occur within a few bars.

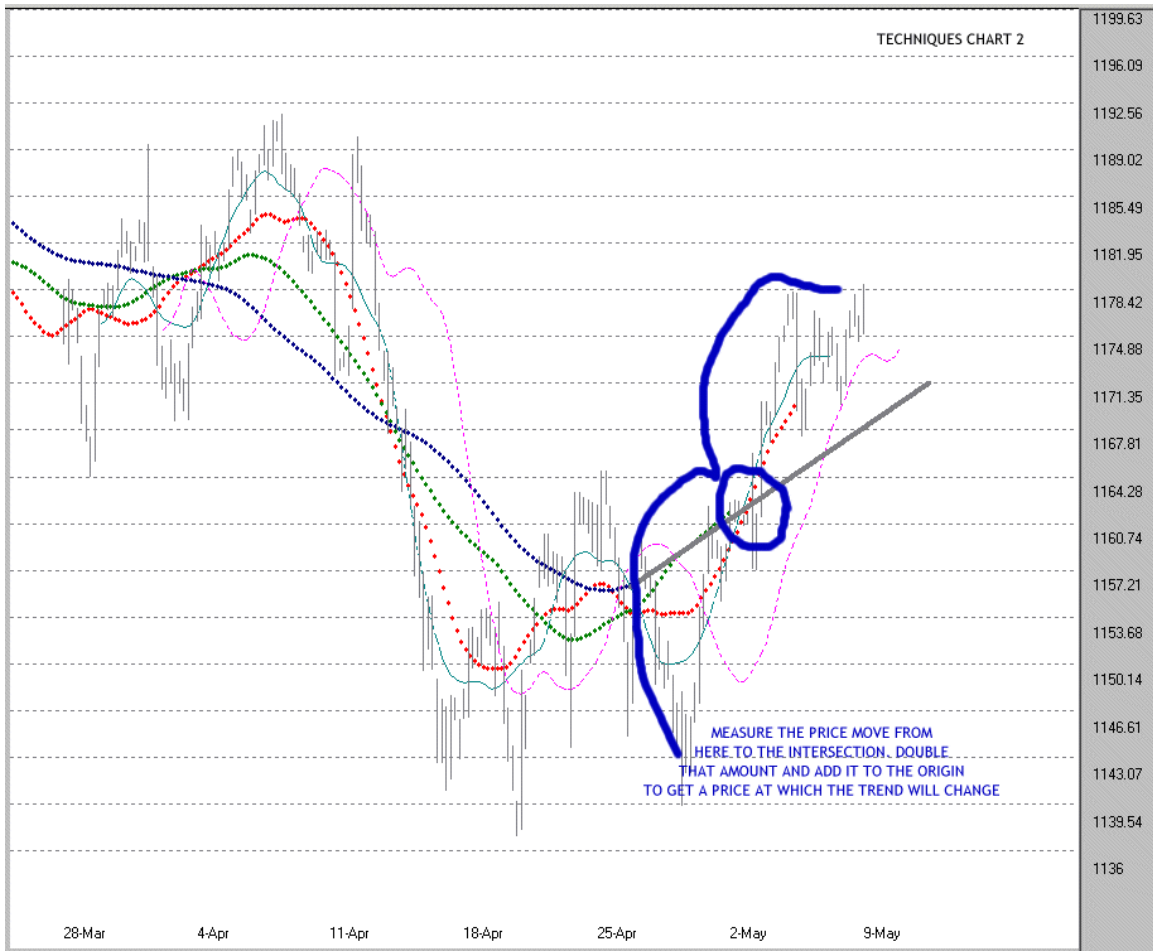


Figure 6

Just eyeballing the chart we measured first from about 1144 to the projected intersection at about 1164. That's 20 points. Double it to 40 and then add that amount to the point of origin at 1144 and we can project that the current up swing will end or meet major resistance (relative to the time frame) at around 1184.

In his book Hurst used only two displaced moving averages when discussing this technique. Our experience is that adding a longer period average is a big help when projecting the probable intersection point of the two lower periodicity moving averages. As time progresses and the longest period average starts to bend the projected intersection point of the other averages can be rearranged with more confidence. The displaced moving average technique is a dynamic process. Depending on the time frame of interest the projected intersection should be updated from every bar to every

few bars. As the longest period displaced moving average bends and then begins to straighten out, the projected intersection of the two shorter displaced moving averages will develop enough stability to use it for forecasting

If you wanted to get fancier you could use the regression function in Excel to calculate future prices for two or three of the displaced moving averages and see at what future price they cross over or intersect. We did that and in the above example the intersection was also around 1164. We will not get into the details of how to do a regression in Excel but promise that it's a lot easier than it sounds. The important point is that the first "y" data point in the regression must be the point at which the displaced moving average last changed direction. That point will also be the first "x" and should be valued at "1" and each successive "x" data point determined by adding 1 to the previous "x" point.

If you want more precision on the origin price when you have a cluster of bars around a pivot low or high, you can again use Excel to average the high-low-close of the five bars (in this example) comprising the cluster. In this case that computed to 1144.48 which is awfully close to what we determined by eyeball alone. Although we mention a couple methods for using Excel to gain greater precision we caution against getting yourself trapped between the decimal points. The best this displaced moving average technique can do is get you to a reasonable estimate of the price or even better, price range, at which the current trend will change. That's powerful information in its own right. Even with our Square of Nine work, which does calculate to the hundredth decimal, we always go away happy when the projected price is "contained within" a particular price bar. For example, if the price projection is 1181.45 then a bar with a high of 1183.21 and a low of 1180.15 works just fine.

Here are more examples.





The distance in points from the start to the intersection will be duplicated from the intersection to the end of the swing. That is the power of the symmetry of the displaced moving average technique.

A TRADING EXAMPLE

The key to using the displaced moving average technique to trade, then, is to approximate the projected intersection of the displaced moving averages in the current swing as soon as possible. We will continue with the INTC Daily chart to demonstrate how this is done.

You knew from the intersection of the Blue-Green-Red displaced moving averages in the bear swing that started at around 28.50 that the bear swing would terminate at around 22.50. You closed out your shorts when prices got into the mid 22s and for the purposes

of our demonstration went long when INTC made a bullish cross over the 13-8 magenta average. That would establish your long at about 23.50 on November 2.

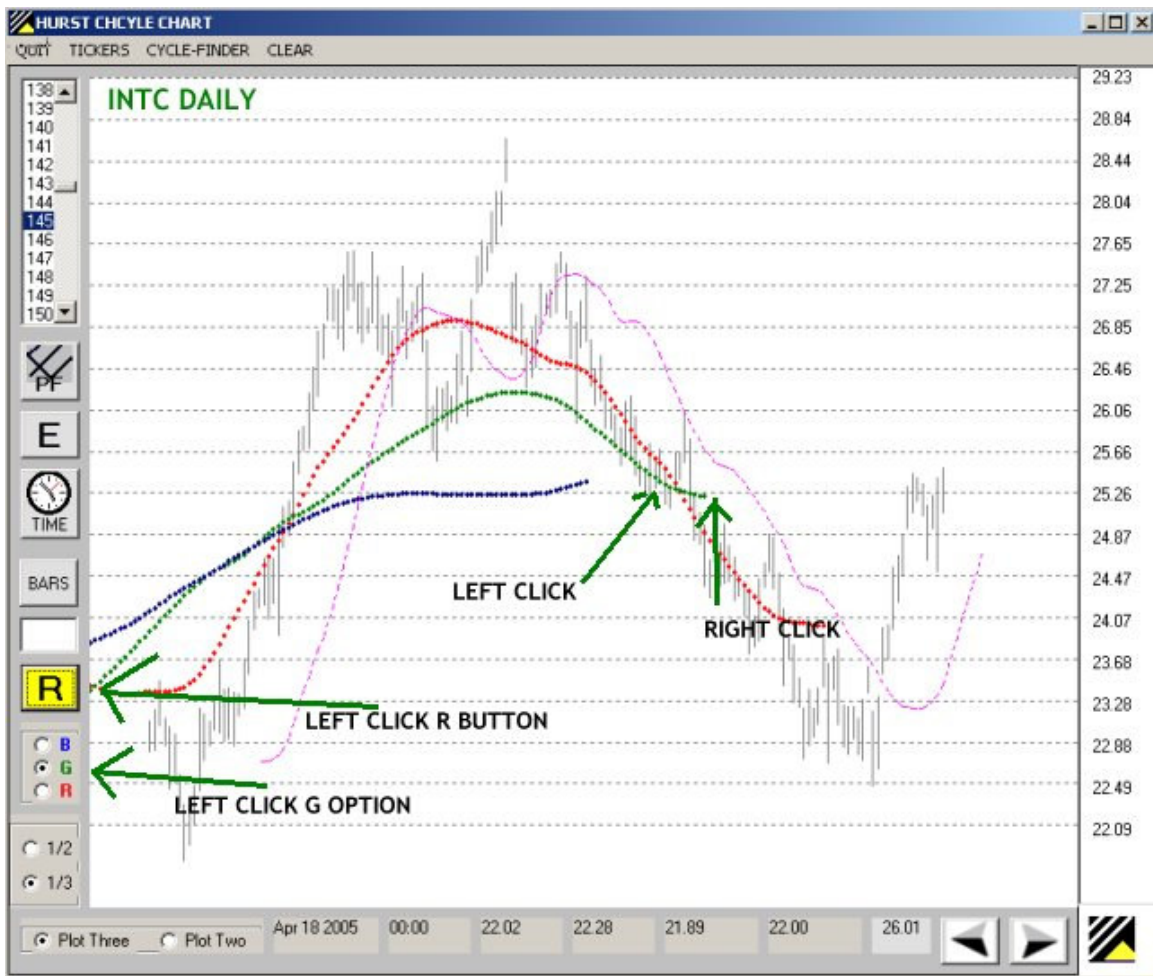
The following chart is what INTC looked like on November 21. This is the chart set-up:

- 145 period Blue average
- Plot Three displaced moving averages
- Use 1/3 proportioning

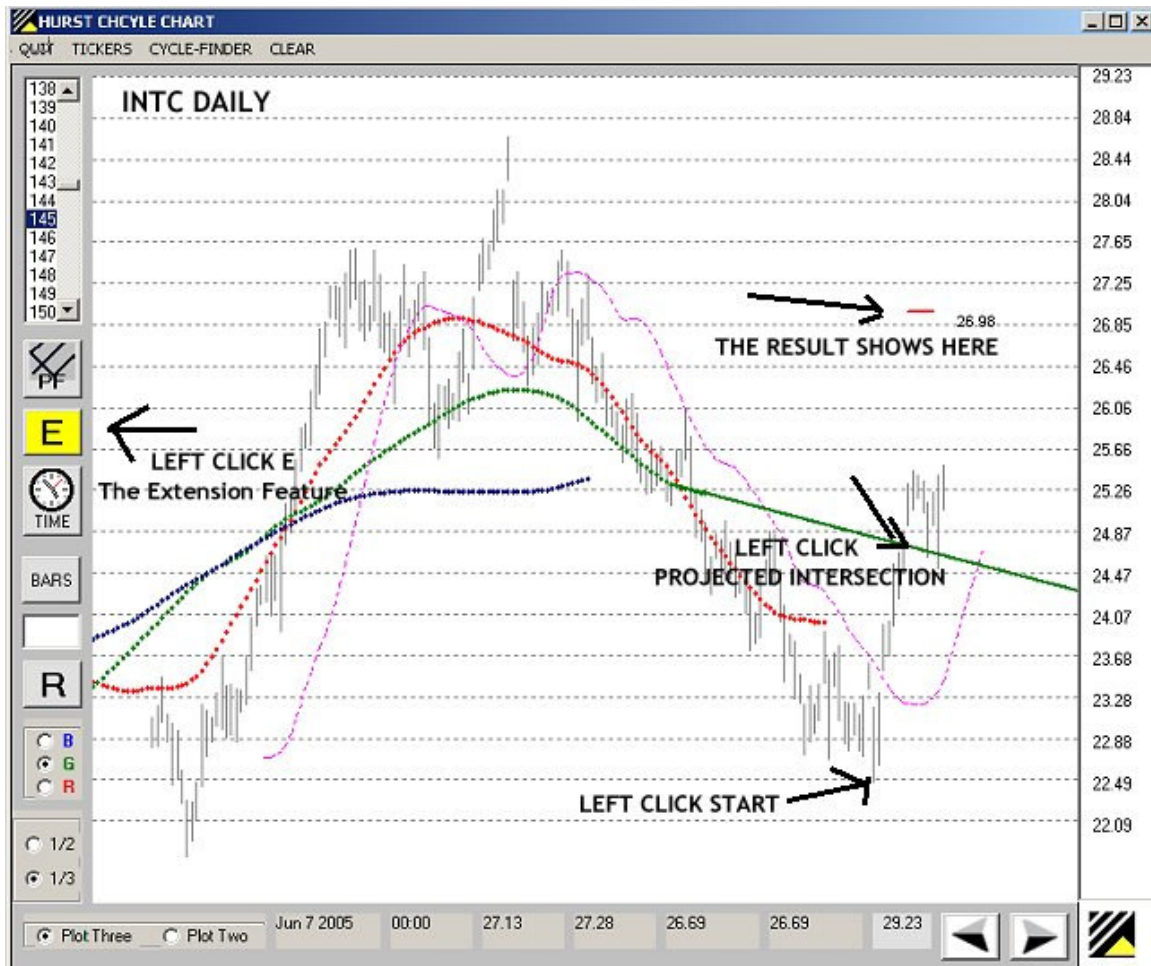


What we want to do is project the Green displaced moving average to the right so that we can get an early estimate of where it may intersect with price and the Red displaced moving average.

You could just draw a free hand line but to make it a little easier and quicker we will use the **R** or regression feature in the training software. Here is the click sequence: Click **R**. The regression feature button will turn yellow to show you it is active. Left click on the **G** option in the option box below the **R** button. Left click on the Green displaced moving average where it begins to change direction by bending up (it is near where it intersects with the Red displaced moving average). Right click just beyond the last plotted point of the Green displaced moving average. Here is an illustration of the click sequence.



This next illustration is the graphical result of the click sequence.



The Green displaced moving average was projected to the right by the **R** feature which does a linear regression on a portion of the Green line segment. We can then use the **E** or Extension feature to approximate where the projected intersection will be likely to terminate the bullish swing. Left click on the low point at the beginning of the swing. Left click on the projected intersection of the Green regression line and INTC prices. The amount of price travel from the low to the intersection is projected forward to about 27. You are sitting on your long at about 25.50 and now you know that you should hold your long with an expectation that INTC will likely move to about 27 or so before the swing ends. You can update the forecast, every new data point if you want, by regressing the Green displaced moving average line segment and repeating the click sequence with the **E** feature.

NOTE: Many, if not most, mechanical systems and techniques that use oscillators focus on the

trade entry. Some are quite good at it. The displaced moving average technique is a valuable complement to any system with a reliable entry process. The strength of the displaced moving average technique is projecting a narrow range price exit area, which is most often the weakness of the entry technique.

We could provide hundreds of charts showing how this technique successfully projected a change in trend for the current swing. You are better served by doing this exercise yourself. We have found that the most compelling reason given by most people who have been exposed to this technique who do not continue to use it is their belief that nothing so simple could possibly be effective. They are wrong. Simplicity itself can be elegance.

USING DISPLACED MOVING AVERAGES TO PROJECT TIME

The technique of using the displaced moving averages to project the price at which a swing will end or meet resistance or support is no more complicated than what we have covered in our examples. The anticipated intersection can also be used to project the time at which we would look for a change in trend.

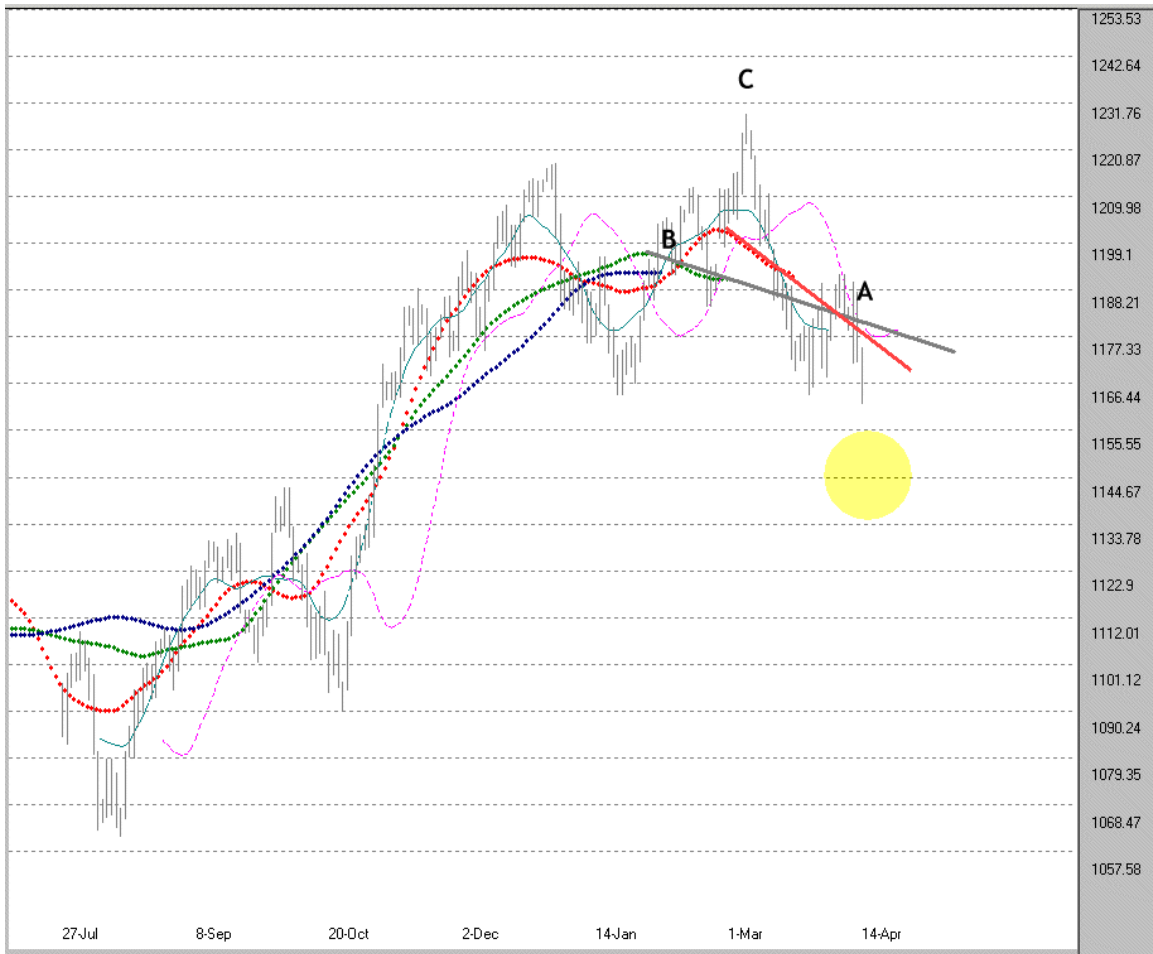


Figure 7

Figure 7 is a recent chart of the Daily SPX. Point "A" is the projected intersection of the Green and Red displaced moving averages. The Blue displaced moving average has not bent over enough yet to project into the same price area. Retrospect is always 100% but this condition often suggests that prices still have further to go on the downside. We can have a high degree of confidence that all three displaced moving averages will eventually intersect. When we can comfortably project the intersection of two of the displaced moving averages, we can surmise that, in this case, prices must continue downward to bend over the Blue displaced moving average so that it moves into the Green and Red intersection point.

Point "B" is the last completed, or in this case nearly completed, intersection of the three displaced moving averages. We can see that the Blue displaced moving average (91 bars periodicity) moves almost in a straight line for long periods of time and that prices

would have to move catastrophically over a very short period of time in either direction to bend the Blue displaced moving average enough to miss the already completed Green and Red intersection at "B".

Measure the distance (number of bars) between "A" and "B" and add that distance (number of bars) to point "C". Point "C" in this case is the most recently completed price pivot point where the change in trend is unmistakable. Adding that distance (number of bars) to Point "C" measures out to the center of the yellow circle you see on Figures 7 and 8. You have probably already figured out that the yellow circle was placed at its price location on the chart by measuring the distance from Point "C" to the projected intersection at Point "A", doubling that amount and subtracting it from Point "C".

You can use Excel to easily count the number of bars between data points if your regular charting program does not do that and if your eyesight doesn't allow counting on the chart itself. The COUNTA() function is what you want to use. For example to quickly count the number of bars between the high on Row 1733 and the low on Row 2141 use COUNTA(A1733:A2141).

The yellow circles on these charts were generated from computer code but the simple math used to determine their locations remains the same as if they were drawn by hand. We use circles instead of single points to show a range of prices and times. You will sometimes hit a projected cyclical turning point on the number but we believe the circle method is a good reminder that we are looking for price and time areas or zones not objects within two decimal accuracy.

How did things turn out?

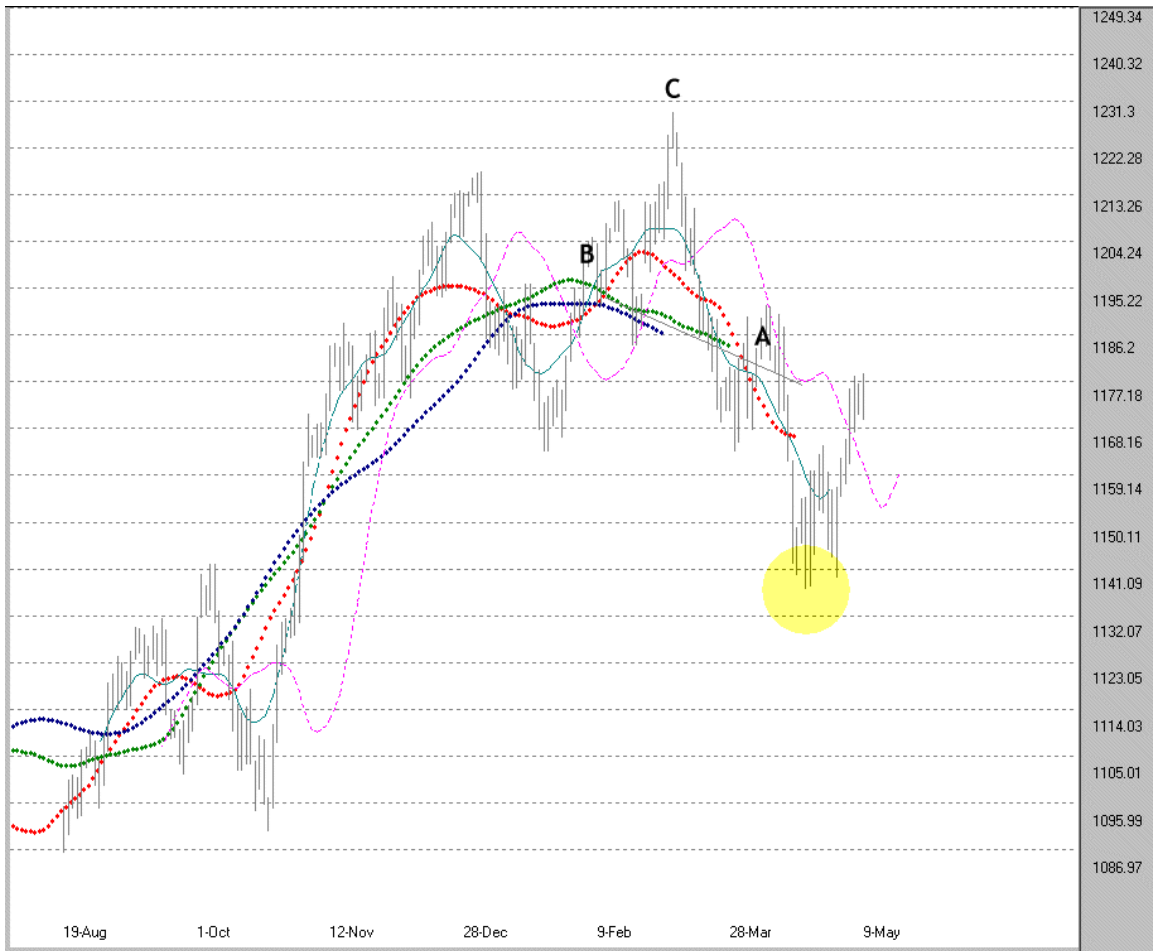
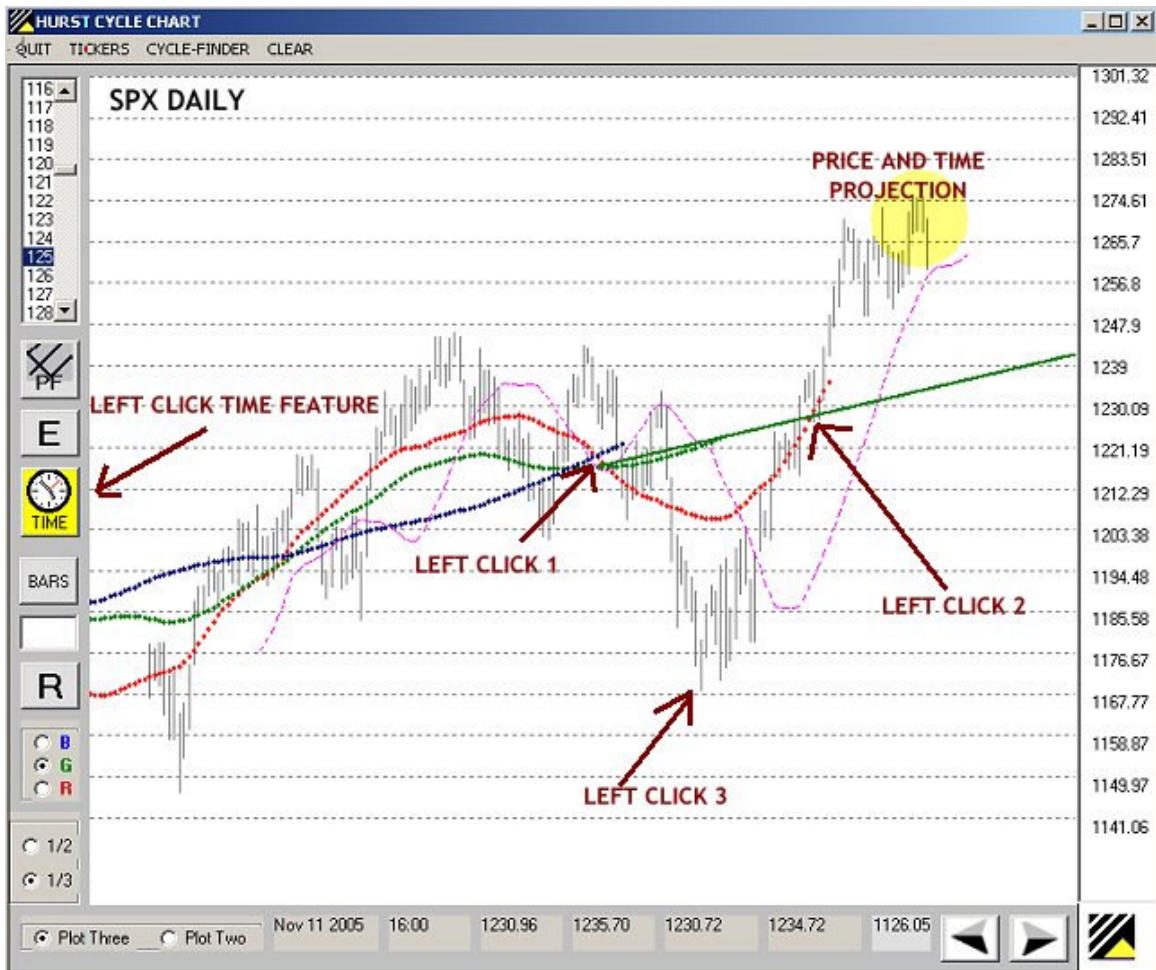


Figure 8

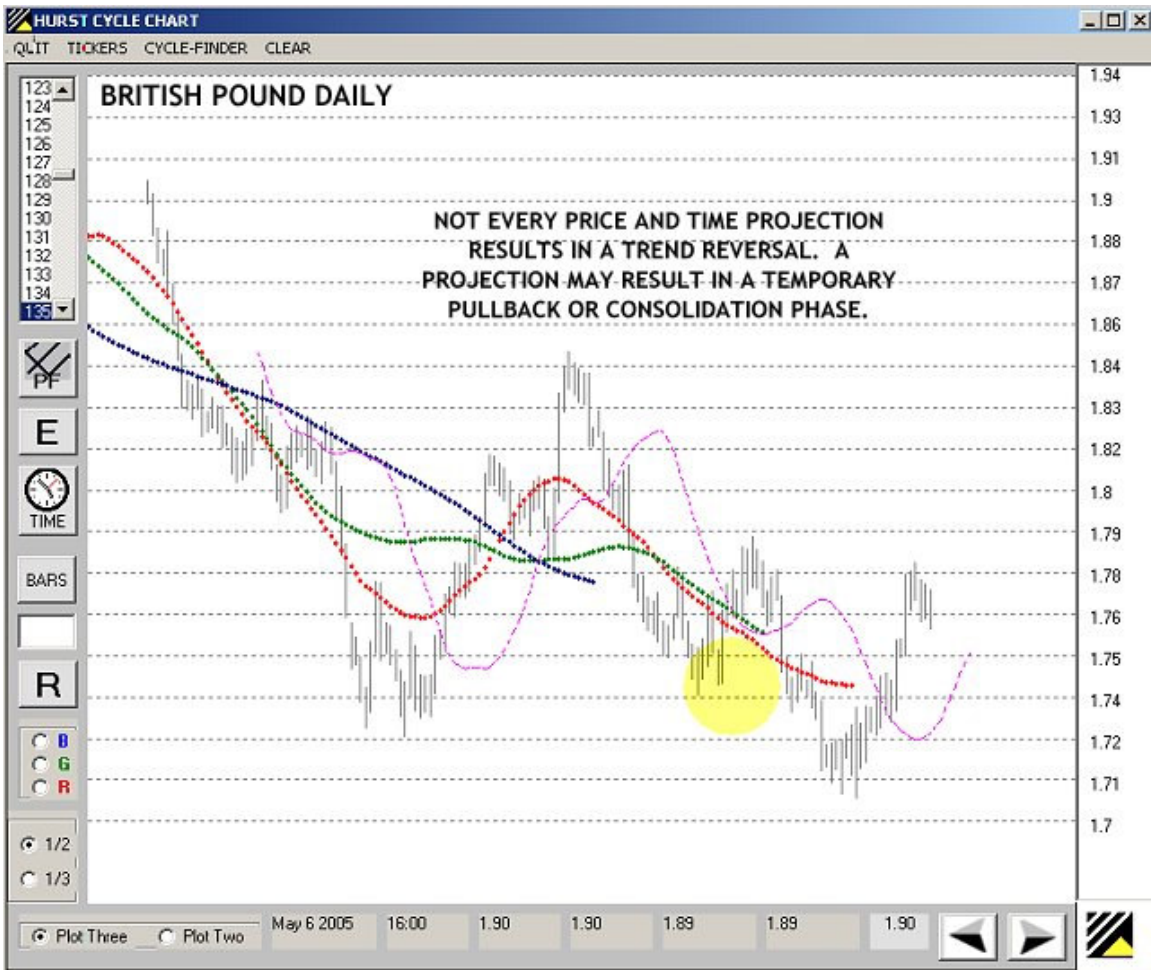
The actual price intersection of the Green and Red displaced moving averages is about to occur a bit lower in price than the early projection but the time projection worked out fairly well. At the time of writing this move is still in play by the way. The chart is current to May 9 and this was being written on May 10, 2005. The Blue displaced moving average is suggesting even lower prices than the yellow circle location but we suspect that most people who were short the S&P from the low 1200s would not have been disappointed to have covered those shorts in the upper end of the yellow circle at around 1144.

TRAINING SOFTWARE EXAMPLE



The above illustration shows the click sequence for using the Time feature to project price and time.

The British Pound Daily chart below shows that not every projection will result in a trend reversal. Even in those cases, however, exiting a position within the projection zone may prove beneficial, particularly if the vehicle is a time sensitive option.



DISPLACED MOVING AVERAGES COMPLEMENT THE SQUARE OF NINE

It is often valuable to match information from reliable, independent sources. If you were temporarily dislocated (OK, "lost" for our female readers) in a rural area with your fuel gauge on E you would probably welcome a second opinion on the fastest route to the nearest gas station. If you were short the S&P after the March 7 high (Point "C" on the previous chart) and had held your position as prices were approaching your displaced moving average price and time projection delimited by the yellow circle, you would probably welcome verification of the probable importance of the April 20 low from a reliable, independent source.



Figure 9

Figure 9 is a Roadmap Chart of the Daily S&P cash which was constructed shortly after the March 7 high. The fixed channels reliably defined the trend into the April 20 low. You can read more about Roadmap Charts at <http://www.tradingfives.com/roadmap.htm>. Support near the lower channel bound along a horizontal price line would have provided a visual signal to look for a change in trend. Also, the most commonly applied Square of Nine technique looks to signal an impending change in trend by squaring price and time in the current swing. At the April 20 low price and time squared to within five degrees on a Daily Chart (three degrees on an Hourly). In Square of Nine terms five degrees is about the limit of tolerance so the verification provided by the displaced moving averages could have been instrumental in making a trading decision.

Roadmap charts and displaced moving average charts have complementary strengths. Roadmap Charts are unique in that once you suspect that a particular bar is a change in trend you can immediately place a Roadmap Chart grid anchored on that bar. If the trend indeed has changed the Roadmap Chart grid will contain the new trend, sometimes almost perfectly. Once the new trend has progressed sufficiently to bend the displaced moving averages in the new trend direction you can use the displaced moving average technique we described here to project a price and time at which the new trend may end. More often than not the price and time projected by the displaced moving averages will closely approximate a horizontal price level on the Roadmap Chart grid or be very close to the outermost Roadmap Chart channel line. An actual Square of Nine calculation using one of the five ways that price and time can square would be better, but the very visual Roadmap Chart will provide immediate feedback to aid your decision making.

TRADINGFIVES.COM

May 10, 2005

(Revision) December 21, 2005

APPENDIX

HISTORICAL DATA COLLECTION

Hourly data is readily available from a number of on-line sources. www.quote.com has a \$9.95/month service with a feature to export several intraday time frames to Excel where they can be saved in ASCII format.

You can also get 5 minute interval stock files at moneycentral.msn.com for free. You will need a MSN Passport, which is free. You have to download manually and jump through a few hoops in Excel to get the msn data in useable condition, but it is available.

EOD data collection is a strong point of AnalyzerXL which easily collects free stock, index, mutual fund and futures data from exchanges across the world. Data collection is only one module in AnalyzerXL which can better be described as a trader's tool in an Excel environment. Other modules include charting with 146 built-in indicator and expert system macros, real time quotes, and option data collection. You can download a 30 day free trial of AnalyzerXL at the Tradingfives website at this URL:

<http://www.tradingfives.com/analyzerxl.htm>

DATA FORMATS FOR THE TRAINING SOFTWARE

The number one problem users have with our training software is data formatting. The training software uses only ASCII data files. Most data collection software has an export function that allows the user to convert the software's proprietary format into ASCII.

The required ASCII format for the training software is as follows:

DATE	TIME	OPEN	HIGH	LOW	CLOSE	VOLUME (optional)
mm/dd/yyyy	hhmm					but not used)

Every data file needs a time field even if End of Day. Use 1600 for EOD data if the time field has to be manually inserted.

The data delimiter can be a comma, space or tab. The software would prefer to see comma delimiters, which has been the software standard since the first main frames, but spaces and tabs will also work.

With the exception of .prn, which is reserved for AnalyzerXL exports, there is no limitation on the file extension. .txt, .asc, .dat, and any other combination (with the exception of .prn) will work equally as well.

Yahoo Finance

You can download and use 'as is' historical price downloads from <http://finance.yahoo.com>. The training software will fill in the required time field with 16:00. There is a quirk (at least as of this date). When presented on the Yahoo site with the choice to "Open" or "Save" the historical data, always choose "Open." This causes the data to open in your spreadsheet. You can rename the file and save it to your ASCII data directory from there.

Do not sort by dates in the spreadsheet. The training software will automatically reverse the native sorting and if you do it yourself it will do it again - wrong.

AnalyzerXL

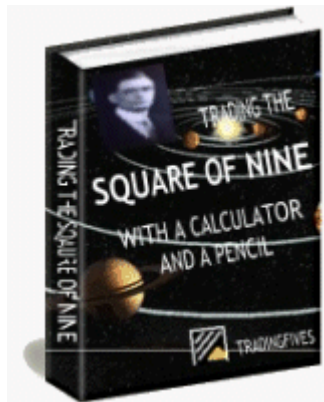
We use AnalyzerXL for all our EOD stock, index, mutual fund and futures data. The file extension .prn is reserved exclusively for this exact set-up. AnalyzerXL has an automatic export macro which makes data collection very easy indeed. Here's a screenshot of the AnalyzerXL data collection set-up. It is difficult to read at normal viewing size but still conveys the simplicity of the procedure.

	A	B	C	D	E	F	G	H	I	J	K
1	Ticker	Start Date	End Date	Periodicity	Data Direction	Data Location	Data Beginning	Data Source	Data Fields	Autorun Macro	Last Status Message
2	Defaults	28.03.2003	22.12.2005	Daily	FTB	AUTO	A1	Rfin	DTOHLC	ExportData("Metastock"; "C:\Exported Data")	

The corollary is that unless your data export is going to look *exactly* like this do not use the .prn file extension.

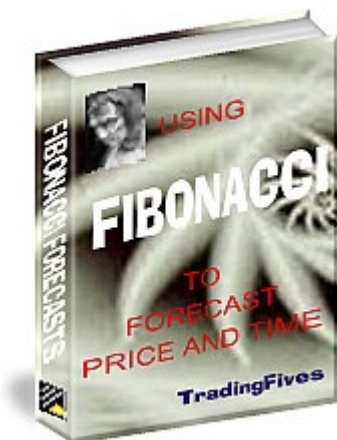
```
<TICKER>,<PER>,<DTYYYYMMDD>,<TIME>,<OPEN>,<HIGH>,<LOW>,<CLOSE>,<VOL>,<OPENINT>
^GSPC,D,20030613,000000,998.51,1000.92,984.27,988.61
^GSPC,D,20030616,000000,988.61,1010.86,988.61,1010.74
^GSPC,D,20030617,000000,1010.74,1015.33,1007.04,1011.66
^GSPC,D,20030618,000000,1011.66,1015.12,1004.61,1010.09
```


OTHER TRADINGFIVES PUBLICATIONS



Trading the Square of Nine with a Pencil and a Calculator

The purpose of this work is to explain concisely and in detail simple mathematical and graphical techniques for applying WD Gann's Square of Nine to real world stock, stock option, and forex trading situations. **The Square of Nine is not your usual method of technical analysis. It's like nothing you've ever seen.** A completely unrelated technique that either confirms or contradicts your usual methods can be invaluable when making decisions. The Square of Nine may not be the magic bullet, although it can sure seem like it at times. Free training software is available.



Using Fibonacci Ratios to Forecast Price and Time

You will become a Fibonacci trading expert with what you get from our ebook:

- we show you exactly how to apply the three Fibonacci ratio techniques
- the variations on each technique and how and where to apply them
- which ratios are important for each technique
- which pivot points and swings to measure from with each technique
- a simple and amazing way to know which Fibonacci clusters will become important

Free training software is available.

UPDATE POLICY

Updates and revisions to this book and to the free training software will be available to purchasers of this book at no cost.

TradingFives has a strict Privacy and Anti-Spam Policy. We will not send you any notifications of updates or revisions unless you have specifically given us permission to do so. You can do that by providing your email address in the form located on the front page at www.tradingfives.com, or you can send a blank email message to our list manager tradingfives@aweber.com.