Trading With Properly Scaled Static Charts

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Stock, commodity, and currency traders who use most modern trading programs are missing some great opportunities. Why? Because most modern trading programs cannot draw a properly scaled static chart. Many traders do not even know they are missing some great opportunities.
Do you even know if your charting program can produce a properly scaled static chart?

What's a properly scaled static chart?

To answer that, let me go back to the time before computers. Yes, there are some of us who remember those days. Back then, only a few traders used charts. They were not called technical analysts. They were called chartists. They believed that by charting prices, they could see patterns, and trading those patterns gave them a competitive edge. Some of the most famous traders who used charts were WD Gann, George Bayer, Ralph Elliott, and Richard Wyckoff.

The charts they used were drawn on graph paper. This paper has a grid of squares printed on it.
To draw a chart, the chartist drew a horizontal axis for time and a vertical axis for price. When they labeled these axis, they set the "scale" of the chart - so many pennies, dollars, or whatever to so many hours, days, weeks, months, or years. Once the time frame and price scale were set, prices were entered with a bar symbol at the end of each hour, day, week, month, or year. Since the chart never moved, it was static. Most importantly, it was scaled.

The champion of scaled static charts was W. D. Gann [1]. Below is an example of his charts. This chart is a monthly bar chart scaled 4 points per square of 4 months, or 12 points per year. On this well scaled chart, the Gann angles actually mean something.
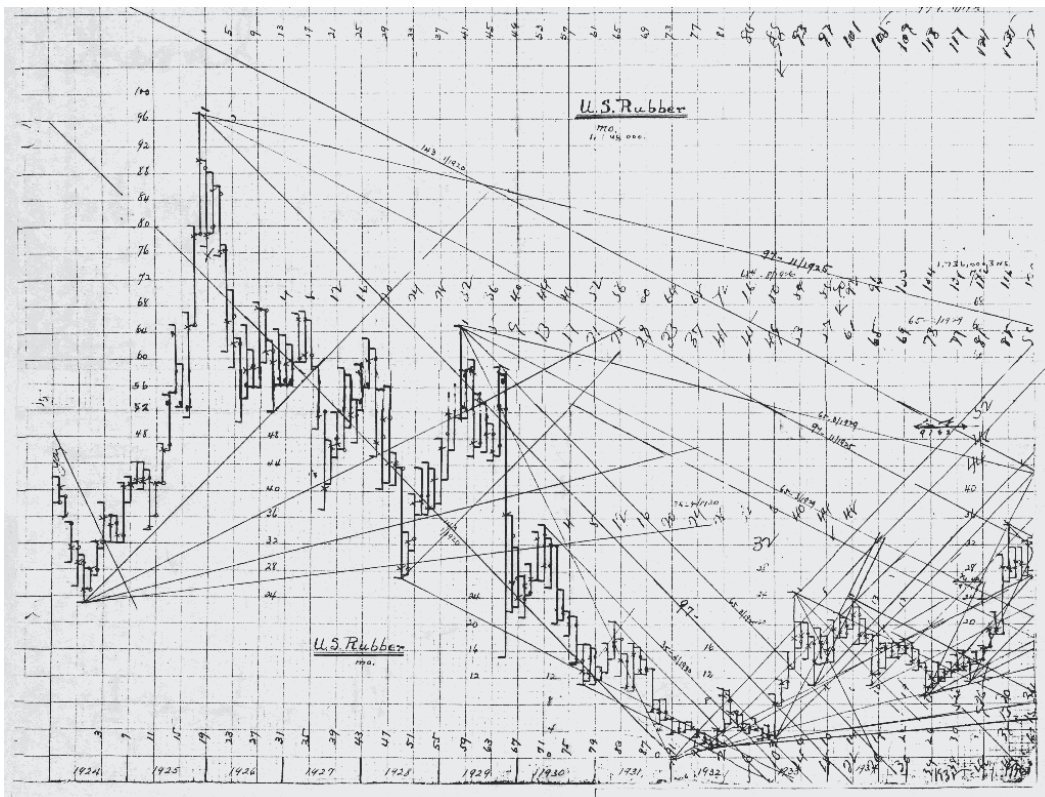
Using Angles

Gann used lines that had harmonic slopes to find key turning points. Harmonic slopes meant that the slope of the line was the ratio of two whole numbers. Gann realized that these lines represented the speed of a natural cycle, and that multiple cycles would harmonize near key turning points.
On this chart, the 45 degree lines represent a 30 year cycle of 360 points.   The 22.5 degree lines are the 60 year cycle, etc. Where these "Gann Angles" converged to an intersection, he looked for a turn and a trade setup. Gann related these angles to astrocycles. His 30 year cycle is the Saturn cycle, which harmonizes with 3 Jupiter-Saturn cycles every 60 years. When his angles converged, he expected to find confirmation in the astrocycles - sort of a "second opinion."

Gann angles applied to the badly scaled charts produced by most modern charting programs have little meaning and little chance of helping the trader. Properly scaled charts are required for the proper use of Gann Angles.

Using Patterns

Scaled static charts also permit the use of two dimensional patterns. Current charting programs that use only indicators are using only one dimension. The current focus on developing computerized trading programs that use only indicators is unfortunate, because there is a much greater set of opportunities if one uses two dimensions.

One of the early pioneers of the use of patterns for trading was George Bayer [2]. He used precisely scaled elliptical overlays on top of properly scaled charts to find key market turns. This chart shows one of his ellipses on a well scaled wheat chart.
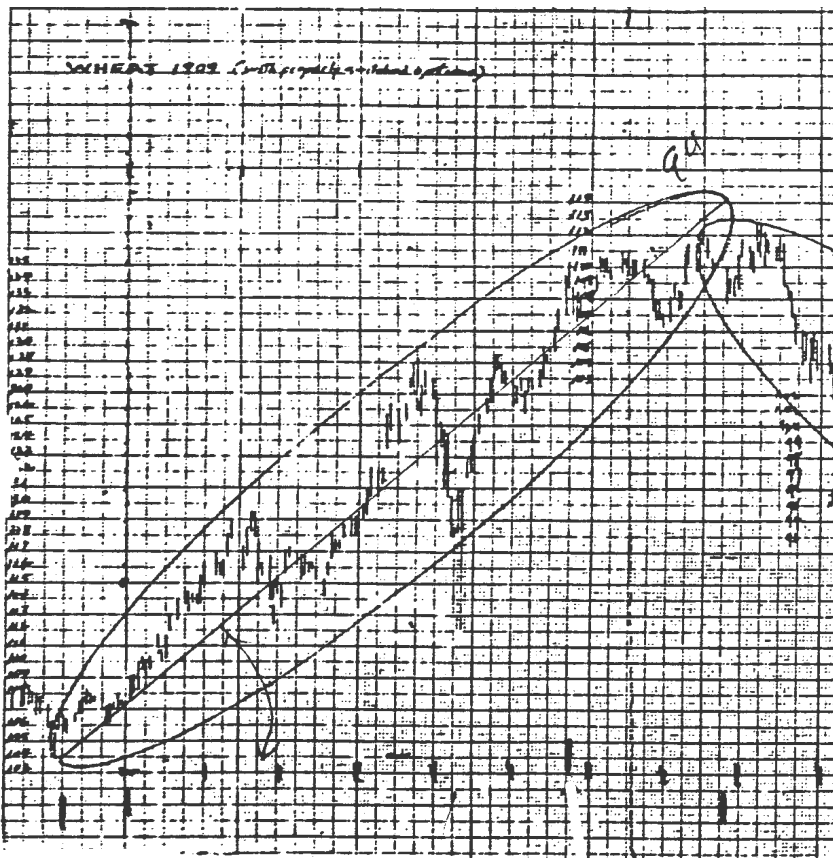
The ellipse is placed at a 45 degree angle. The ellipses are of a precise, predetermined size, and they only work on properly scaled charts. George Bayer produced many books and courses illustrating the use of his ellipses on properly scaled charts. Like Gann, he linked these patterns and angles to cycles.

Going For A Joy Ride

Contrast these charts with what most traders see daily: a chart that constantly scrolls from right to left as each new data bar arrives, and constantly adjusts the vertical scale automatically. It's like riding in a car, looking out the windows. I call these charts "joy ride" charts. Personally, they make me car sick. I believe their constant motion can induce a type of hypnosis, which can be psychologically addictive. They place the trader in a reaction mode, rather than in a controlled, planned, analytic mode.

Many programs, at least in their default settings, place the most recent bar on the right of the chart, and cannot even create space to the right of prices. Almost none of these programs can tell you what the scale factor of the chart is, let alone let you set it. Lines on these charts have no angle property.

Further, the majority of these programs do not scale the horizontal axis in units of time. They usually scale in bars, and bars only exist if trading actually occurred . The chart can usually contain only so many bars, with each bar being set to a certain "width", expressed in time units.   While this method sort of uses time, it does so only indirectly, with unfortunate consequences. More on this in a moment.

So where did these "joy ride charts" come from? They came from the very first efforts to use computers to draw charts. These computers had very little memory, very little disk space, and very low resolution displays. It simply was not possible on those computers to create anything like the paper charts being used by the chartists. So the programmers did what the could - they displayed a few bars of data, and scrolled the display as a way of updating it. With the coming of electronic data feeds, a trader could at least see the latest action. In large trading firms, these traders often sat in a "chart room", where they were surrounded by large scaled static charts [6]. So they had the best of both worlds. The static scaled charts gave them context, and the scrolling charts gave them updates.

As more and more people started producing computerized charting programs, they simply copied this early "joy ride" model. As trading moved from the few to the masses, the chart rooms with their beautiful scaled charts disappeared. Many traders lost the context, and the focus shifted almost entirely to the latest update, the latest bar. With the current generation now being "always connected, 24/7", this seems natural.

Can't We Do Better?

But does it make sense? Why should modern charting programs only produce "joy ride" charts? Sure, they are emotionally stimulating, but that may not be a good thing. More importantly, the computer limitations that were the underlying reason for the "joy ride" charts are gone.

My original IBM PC had 64 *kilo*bytes of memory, and a 10 *mega*bytes hard drive, and a 480 x 320 x8 display. My current PC has 8 *giga*bytes of memory, and 250 *giga*bytes of solid state disk, and a 1920x1080x32 display. So my PC has 125,000 times as much memory, 25,000 times as

much disk, and a display with 54 times as much resolution. It runs 100 times faster. So there is no reason to only produce "joy ride" charts. Such capabilities can easily do outstanding scaled static charts.

Getting It To Work

However, there are some tricks to implementing properly scaled static charts. They are harder to program than "joy ride" charts. I've learned this from building two proprietary charting programs that produce properly scaled static scaled charts.

First, one has to have a clear concept of time and how to add and subtract time. The answer to this is to use Julian Equivalent Dates (JED), as used in astronomy. One needs code to convert from year, month, day, hour, minute time to JED, and back. These routines are readily available.

Second, one must use time as the basic unit for the horizontal axis of the chart. The chart has a starting JED, and an ending JED. This axis is totally independent of any data. It does not depend on the time stamp of the data, and is established before any data is applied to the chart. The vertical scale can be fixed to a predetermined range, thus setting the price scale of the chart, or the scale can be used to set the vertical price scale. Both options are needed.

The time axis is fundamentally continuous. In the basic case, the chart displays time linearly, left to right. This type chart can then display any type of data occurring any time between the starting JED and the ending JED. An example is a natural cycle, which moves along even when exchanges are closed. Accurate use of time cycles requires this sort of CALENDAR time. It has no time gaps.

A less accurate time scale may have segments omitted. A common example is to omit weekends. This TRADING DAY time should not be the default, but an option on top of the basic CALENDAR time. The inclusion of space for holidays should also be an option. Another case of segmented time is session times. One may wish not to see the time intervals when a market does not trade, but it should be an option to display this time interval on a chart. Any elimination of time intervals, of course, reduces the utility of two dimensional tools, so the user should have complete control over collapsing or including these "no data" segments.

Data must be buffered with its associated time stamp. For computing such things as moving averages and cycle filters, the data storage must begin before the Chart Starting JED, so a Data Start JED is needed. Ideally, data is stored independently of how one wants bars to be drawn. One option is to store one minute data, and then draw any bars desired from that data. Wave59 does this. In time period where there is no data, the data values needs to be filled with the last value or interpolated when a new value after the gap is available, so calculations that are time sensitive are accurate despite the data gap.

Obviously, one must establish internal bookkeeping for the mappings between time, data samples, bars, and pixels. The user should be able to compute indicators based on time, not just bars. For example, moving averages and cycle filters should be expressible in time units, such as a 110 minute EXMA. This should be independent of how bars are being displayed.

As a chart is adjusted along its horizontal axis, bars may end up being plotted on top of each other. This is OK. The user can adjust the bar width. But the bar width should have no effect on shrinking or expanding the chart's time scale.

Traders who use pattern overlays need the ability to interrogate the blank space on the right side of a chart to learn when a pattern may terminate. Some "joy ride" programs, which uses data bars to set the horizontal time scale, give incorrect answers when asked for the time of a future bar location. For example, if the data is daily bars without weekends, the software may assume that time in the future includes weekends, because internally it does not know whether it is drawing calendar day or trading day charts. This flaw has been in eSignal for years. Some programs will not even report future times.

The data cursor needs to always report time accurately.

None of this is beyond today's technology or the skills of current programmers. They just need to understand the requirements.

Toward Better Strategies

With software that can do properly scaled static charts, traders can implement much more advanced strategies than just those based on indicators. Consider these examples:

Time windows:

If the 20 minute EXMA crosses the 110 minute EXMA between 11:03 and 12:17, buy if the 20 crosses above the 110, sell if the 20 crosses below.[3]

Angles:

Buy if the 45 degree angle down from the highest high in the last 60 days and the 30 degree angle from the preceding low of the prior month intersect and the CSI has been below 150 in the last two weeks and has turned up.

Patterns:

Sell if prices leave the best fit of a 6 inch 45 degree up Bayer ellipse anchored on the lowest low of the past year.

Geometry:

Buy when the 20 point 20 day per side equilateral triangle fitted to the highest high and its preceding low ends.

Fractals:

Buy if the nominal 8 trading day down Fractal of Pi [4] ends and the polarized fractal efficiency [5] dips below .6 and turns up.

The Window Of Opportunity

Some of these strategies imply a matching of a pattern to price. Doing so only with software may be too much to ask, given the slow progress of the once promising field of artificial intelligence.

For now, it is the experience of the author that the human, given an easy to adjust pattern overlay, placed over a properly scaled static chart, can easily place it, thus identifying a *price-time region of opportunity* on a chart. If the user could then simply draw the "*window of opportunity*" on the chart, he could then tell the strategy to execute only in this window. That would be a quantum leap forward from indicator only trading.

The Future of Trading Programs

It amazes me that more people have not demanded static scaled charts, with future price and time displayed to the right. Why would you ever buy or sell anything if you did not have a mental picture of where the price would go in that future time-price space? Only with a static scaled chart can you visualize this.

The benefits to the trader of having a trading/charting program that can do well scaled static charts is enormous. Such a program, coupled with two dimensional strategies, automatically executed, could give the trader a distinct edge in the very competitive game of trading for a living.
The challenge to today's vendors of trading programs is to make this advance.

References
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[1] **How to Make Profits in Commodities**, W. D. Gann, 1951

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[3] **Trading MoonTides Tutorial** at DayTradingForecasts.com at
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[5] **Polarized Fractal Efficiency**, Dr. Hans Hannula, Stocks and Commodities, January, 1994

[6] personal conversation with a trader at Fidelity Investments, 1987.

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