Turning Points Analyzer

General Idea

The main idea of this module is finding the price levels where the price movement changes its trend. To do that, we create the zigzag and look for these levels by analyzing different proportions of zigzag swings. Actually, this idea is very close to Elliot Wave Theory, but our goal is to provide the universal tool that allows to reveal hidden patterns in zigzag.

Let's consider the zigzag created for IBM shares. This picture shows 8 months interval:
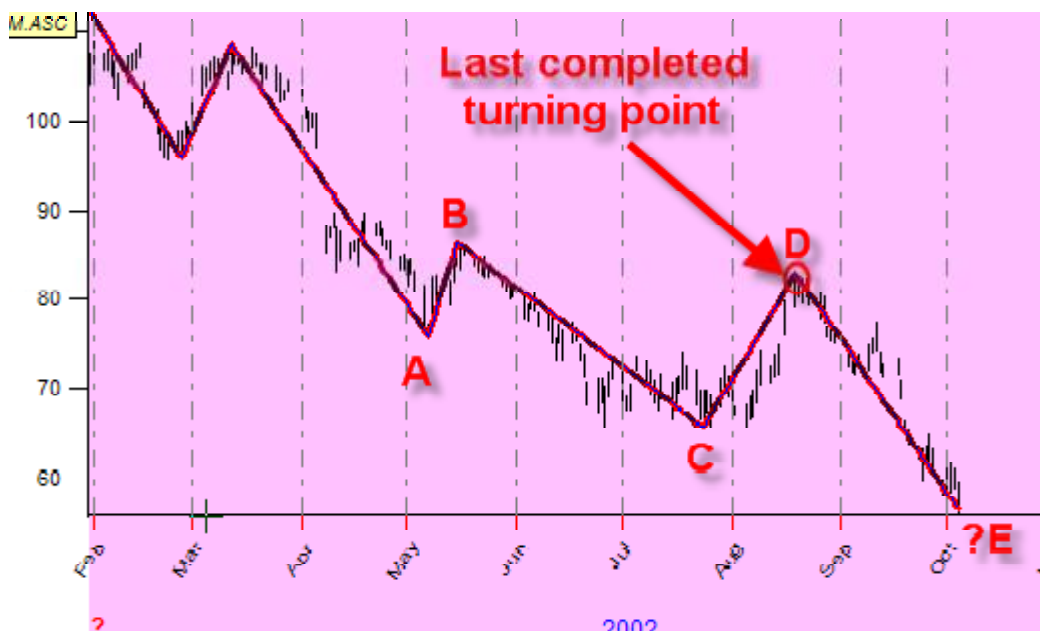
Here you see that the turning point **D** is the last known turning point. This is TOP turning point, so we are looking for the end of downtrend movement. We need to know the height of **D-E** swing. In technical analysis the **D-E** swing is called retracement. Our target is to find the height of this retracement swing to anticipate the next Bottom turning point **E**.

The most obvious solution is finding the height of **D-E** swing by analyzing all proportions related to TOP turning points. As an example, we can analyze the proportion for another TOP turning point, B: **BC/AB**. If this proportion has some typical value for this stock, we can assume that the same value might work for the turning point D and thus find the height of **D-E** swing through the height of **D-C** swing.
Here we have two possible ways:

1. We can use classical ratios (the most well known ratio is Fibonacci ratio) and see how they work for our

stock;

2. We can do a statistical analysis of the ratios occurred in the past history of our stock and then make decisions supported by solid math base.

Both approaches are available in *Timing Solution* software, though we favor the second one. It gives you a clue to a real process. Moreover, you will be able to see when the classical ratios work.
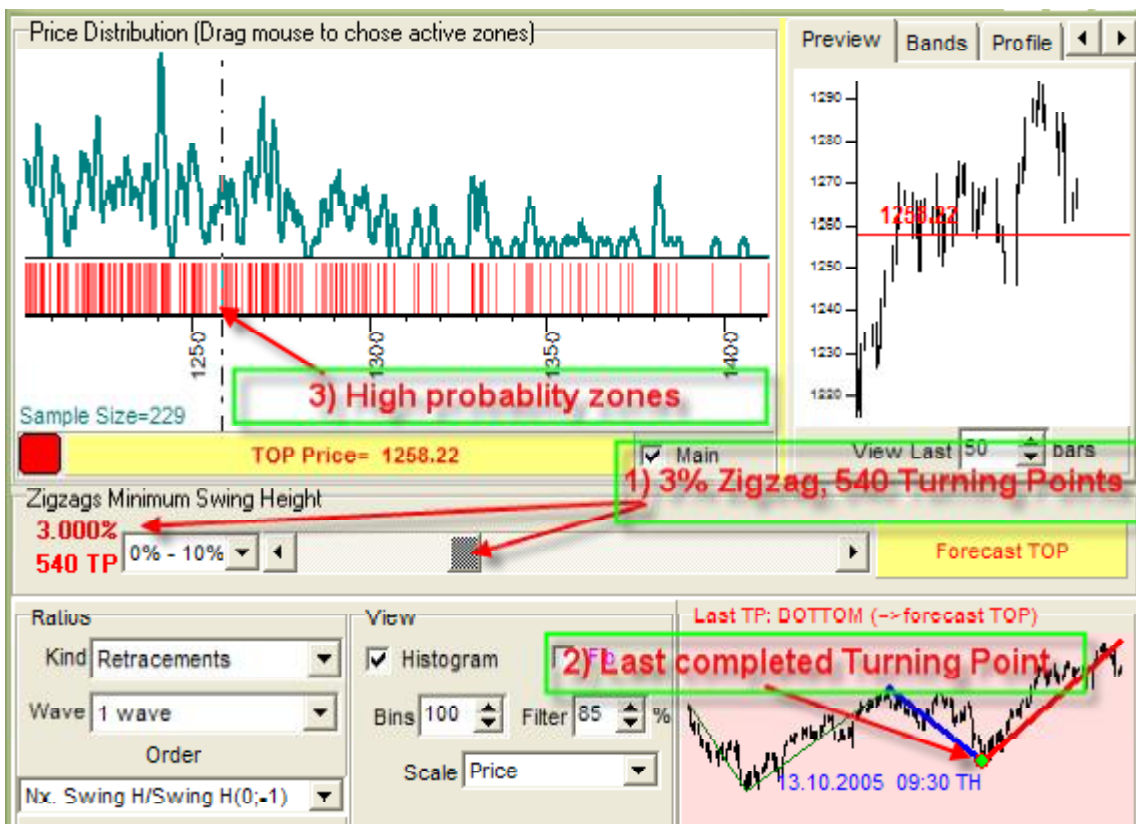
Easy Start

Let us look how this module actually works. As an example, we use S&P 500.

I have downloaded S&P 500 index data from 1950 to the end of January 2006. While downloading the historical data, set the "Forecast Horizon" big enough to be able making a forecast for a long period ahead:
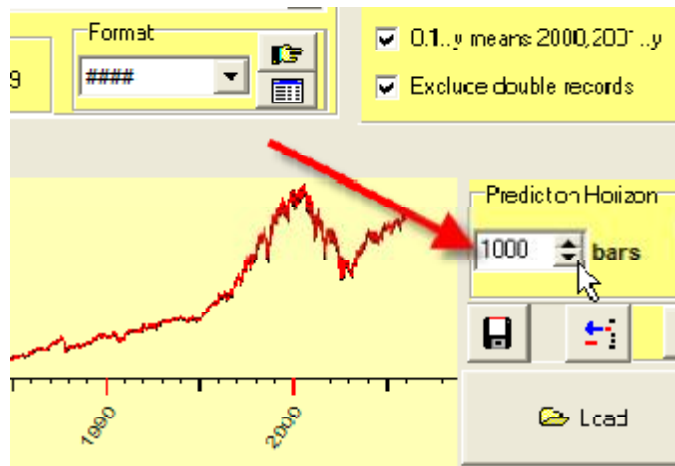
Run "Solutions"-"Turning Points Analyzer". You will get this window:

What options does this window provide to you?

1) The slider in "Zigzag Minimum Swing Height" allows you to adjust the analyzed zigzag. The bigger this value, the longer term waves we research. In our example, we use 3% zigzag that allows to reveal swings for several months. This zigzag shows 540 turning points, it is a pretty good material for the statistical research. Actually, this parameter is extremely important. It is the first parameter you should try to vary to get the most "predictive" zigzag.

2) The last completed turning point (according to this zigzag) was the BOTTOM in October 13 2005, and we are looking for the next TOP turning point. If we would choose other parameters for zigzag, for example let it be 2% zigzag, the last completed turning point would be TOP January 11,2006, and this zigzag is suitable to finding BOTTOM turning points:


3) The central issue of this module is the histogram - "High probability zones". In the program, the same histogram is shown as a vertical one and a horizontal one. Just looking at the vertical histogram, we can assume the price levels where the TOP turning points are more probable. Looking at the details on the horizontal histogram, we can easily see four main clusters there corresponding to four different price levels:
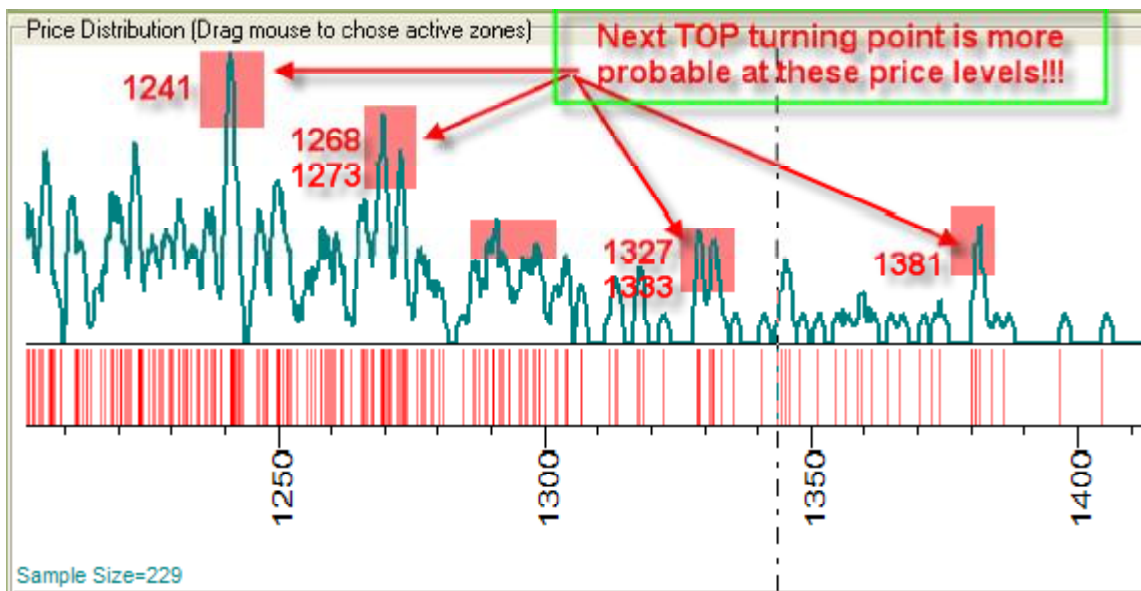
These price levels are based on statistical research, and the most interesting issue for us is that the TOP turning points "like" some price levels more than other ones. The existence of clusters at this diagram is the best proof of this fact. The upper diagram represents the histogram or probability: the higher histogram, the more probable is that the turning point will occur at this price level. The X axis corresponds to the price. The red stripes represent all available historical TOP turning points normalized to the current price. Drag the mouse to these four major clusters and look at the Main Window:

Thus, you can see the most probable zones for TOP turning points. The high probability histogram adjusted to real price scale is shown in the right corner. So you can see the most probable zones right in the Main Window:
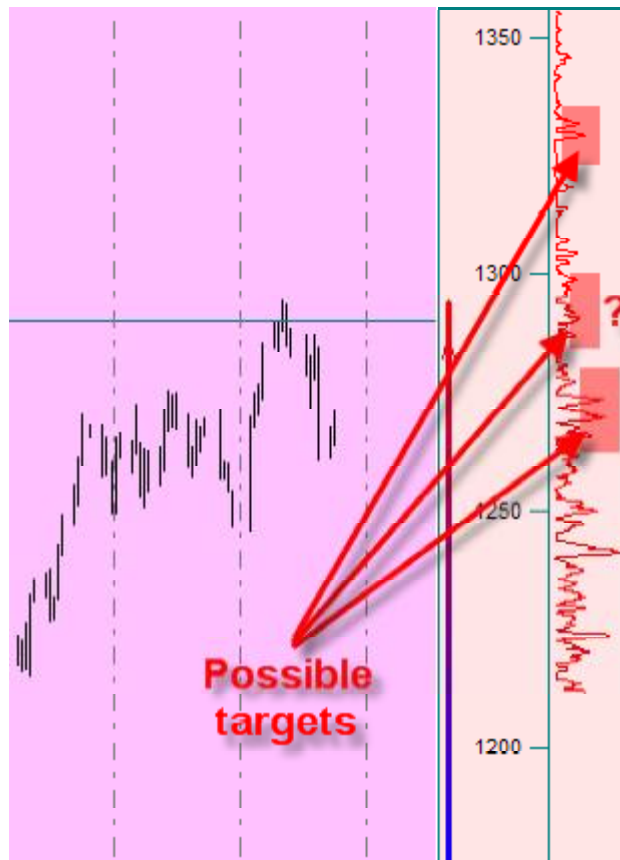

Using the pure mathematical approach (or "quantitative" approach), we can understand the risk degree in regards to our conclusions on turning points locations. Look again at this diagram attentively:
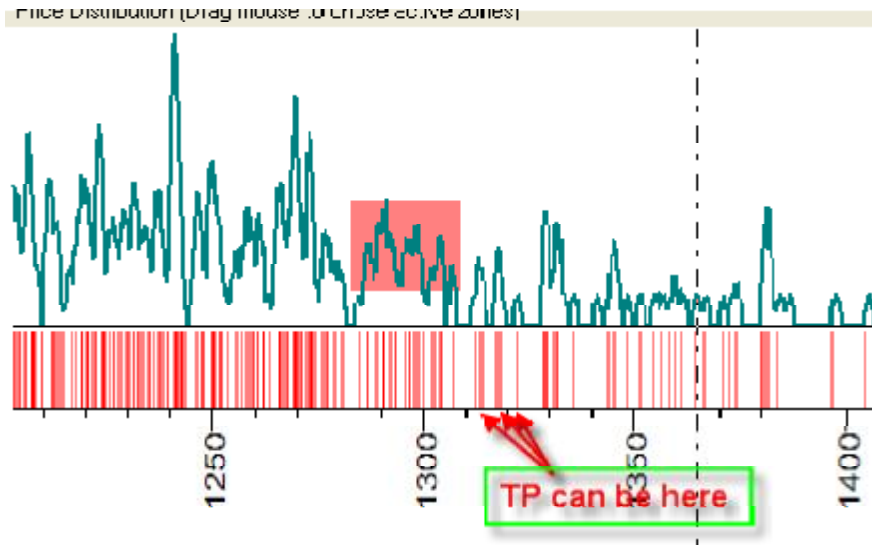
The red stripes are presented almost everywhere, even when the histogram value is very low. Look at the big cluster at 1285-1310. It shows many peaks, though the time interval is too wide. We can make an assumption regarding the DEGREE OF PROBABILITY that trend changes occur in these cluster zones. And the program can calculate these zones.

By the way, checking the "Fib" option you can see how the most used in technical analysis ratios for retracement swings correspond to real price movement:
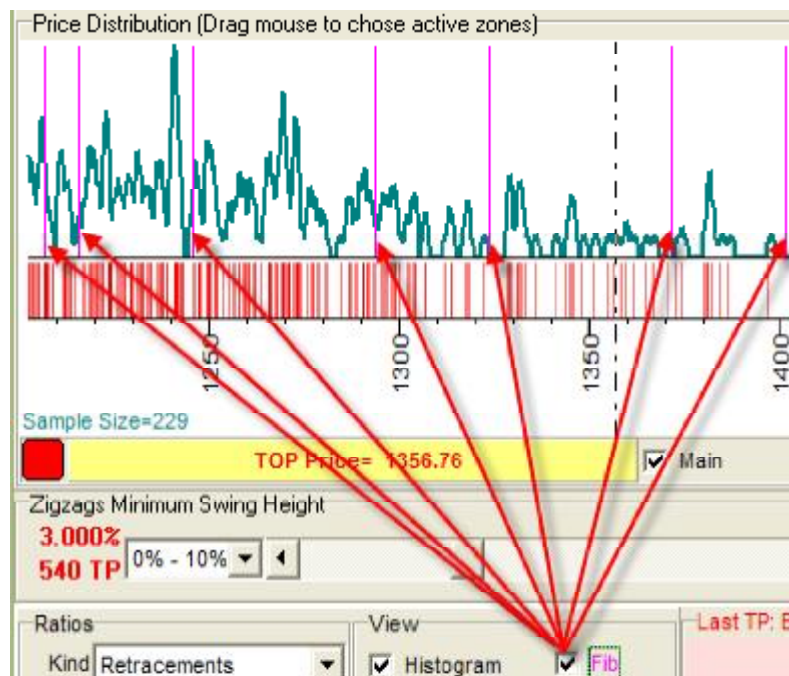

The purple stripes that correspond to these ratios do not hit maximums on the histogram.

The next question we need to answer is WHEN this turning point can happen. We can resolve this problem using the same approach, though instead of the price we will use the time length of these swings.
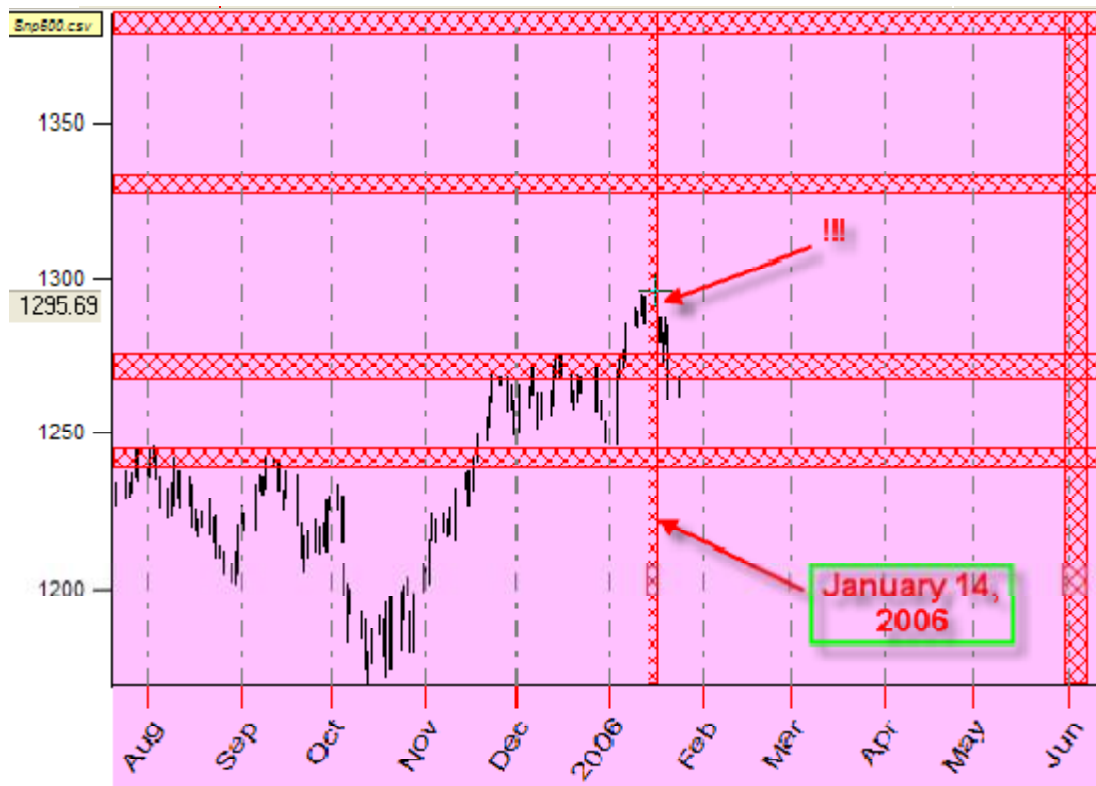
It is easy, just set "Retracement Time" option:

Now you can see the same histogram in Time scale:
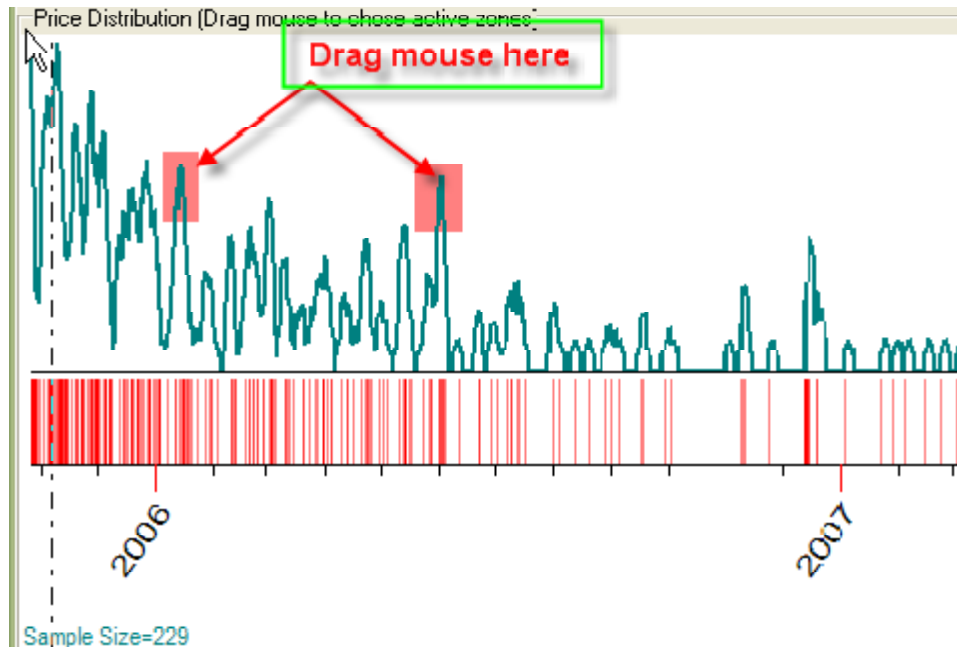
The higher the histogram, the more probable is the turning point's occurrence there. As you see, the time histogram is more even, however it gives us some hints regarding turning points time. Drag the mouse as shown at the picture and watch the Main Window:

Vertical bars represent the high probability zones for time. One of this zones hits the probable top turning point around January 14, 2006.
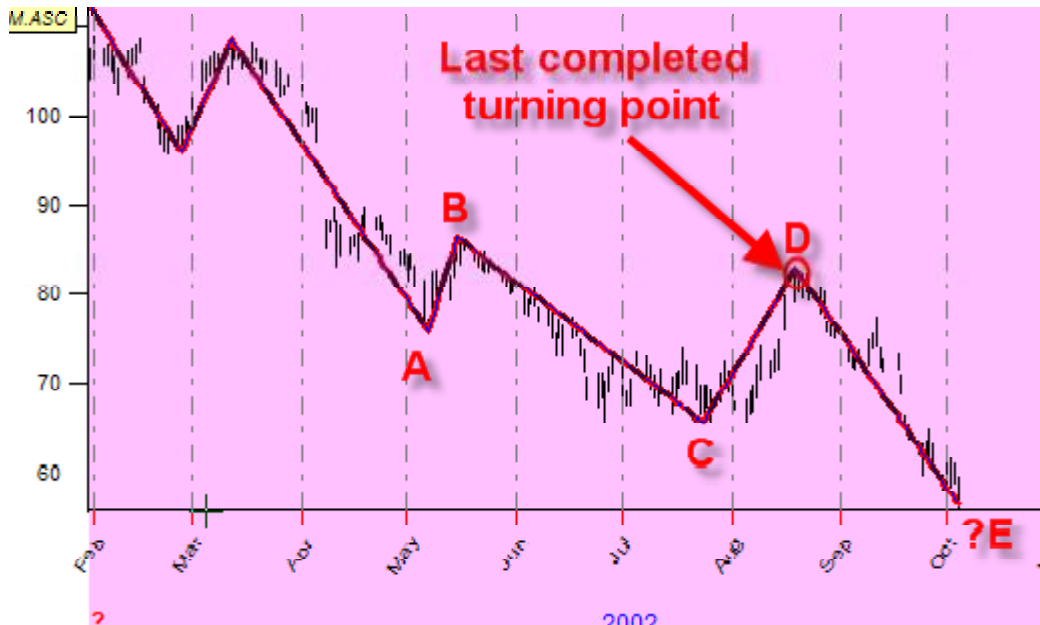
Going into Depth

The Timing Solution allows analyzing zigzag from different points of view. These options:
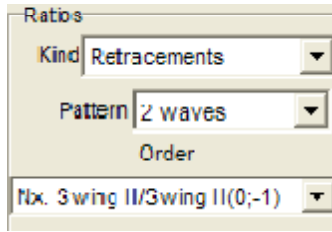
define what ratios to analyze.

"Kind" options: **Retracements** - analyze the retracement for a swing. Back to this picture:


To get the height of **D-E** swing, we analyze the ratios **CD/DE**, **AB/BC**,... where **CD** is the height of swing **C-D**, etc.

Option **TP Price Levels:** setting this option, we analyze not the swing's height, but ratios between price itself, we provide the statistical analysis for **(Price E)/(Price D), (Price B)/(Price C)**..., where "**Price E**" is price at the **E** turning point.

Option **Retracements Time:** in this case we analyze the ratios for swing lengths.

"Order": in all examples above we have analyzed the ratios between neighboring swings. However, using Timing Solution we can make a forecast based on different ratios, like ratio between swing **D-E** and **B-C** (picture above). Both these swings correspond to downtrend movements in our case.
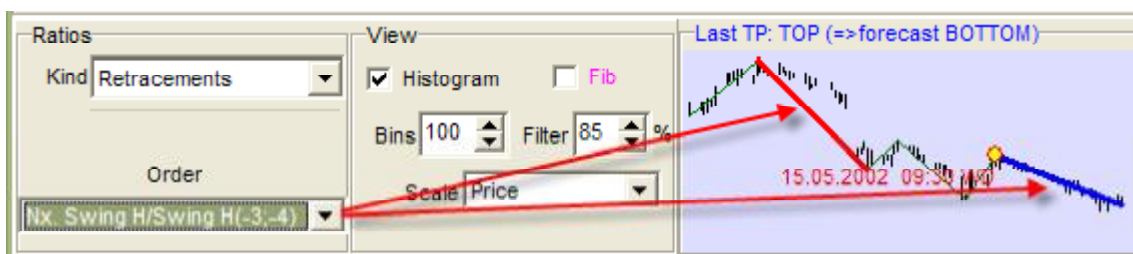

Actually, the swings used in ratios are marked in the right chart.

"Pattern": setting this option, we ask the program to provide the statistical analysis for different waves. In all examples above we used two wave model.
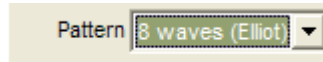
As an example, this setting: Pattern [8 waves (Elliot) ▼] means analyzing 8 waves proportion. In other words, we assume that each 8th wave repeats itself:

Look at this chart:
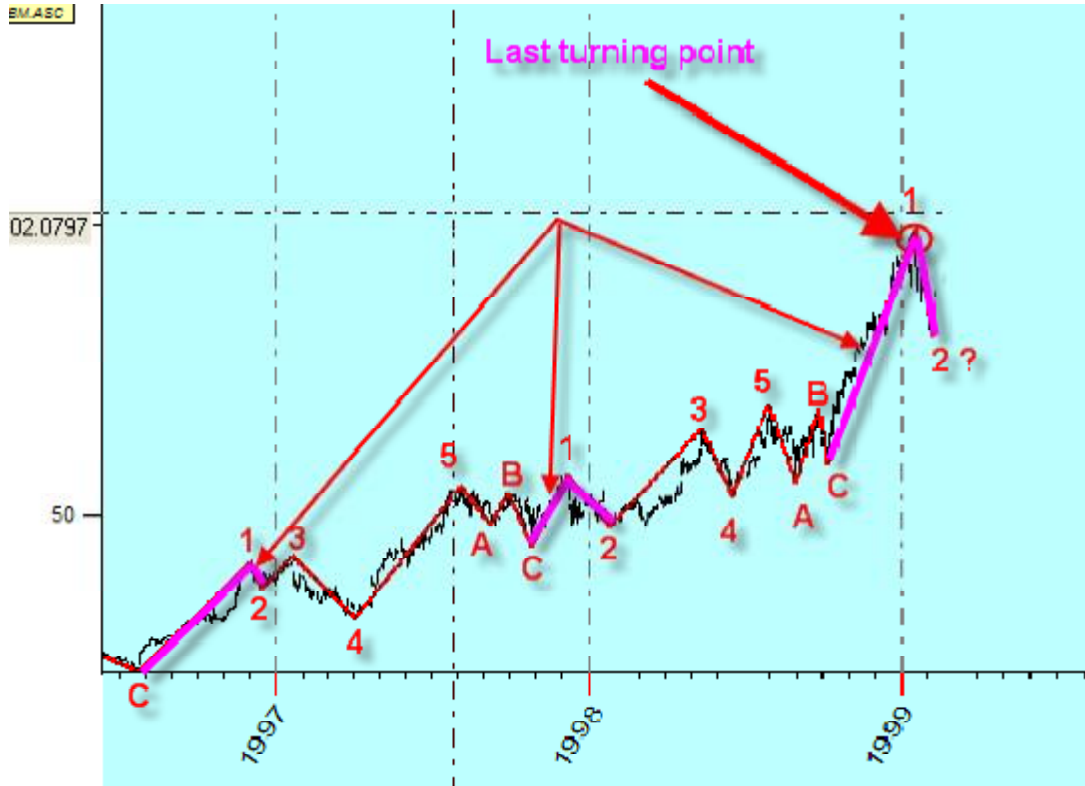
Suppose we have point "1" as a last turning point (as in the picture above) and we want to find the bottom turning point 2. Setting 8th wave model, the program will analyze the ratio between swings **1-2/C-1** (using Elliot notation).

But we need much more price history to provide this analysis.

To add to the theme of the most typical ratios, we have downloaded the Dow Jones Industrial index from 1885 to 2006 year. We have created 5% zigzag; it provides 789 turning points and, as we can see, the usage of 8 waves model gives us 82 ratios (Sample Size), and we can see the cluster 1.0 1.52 and 1.82. Somehow the stock market likes these retracement proportion:
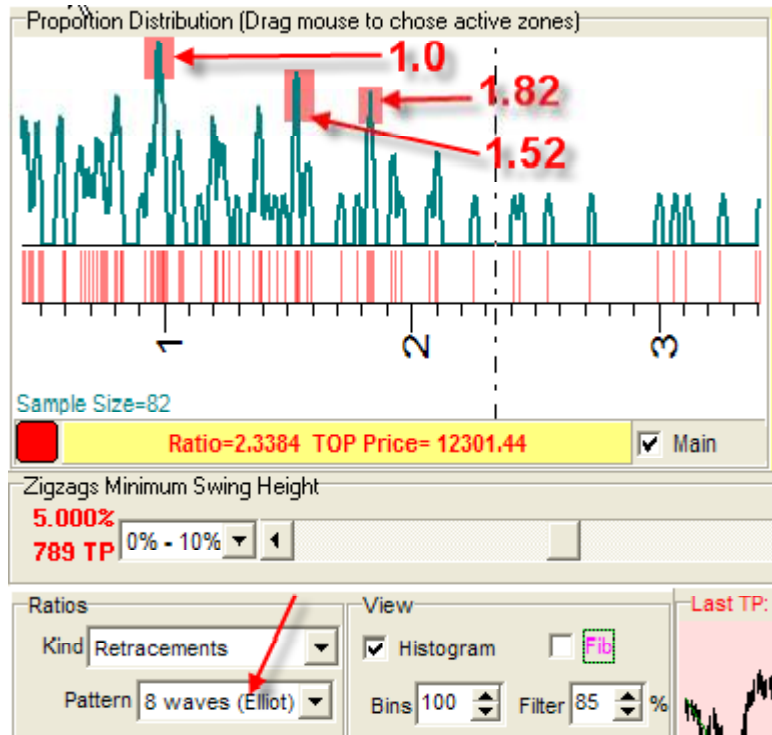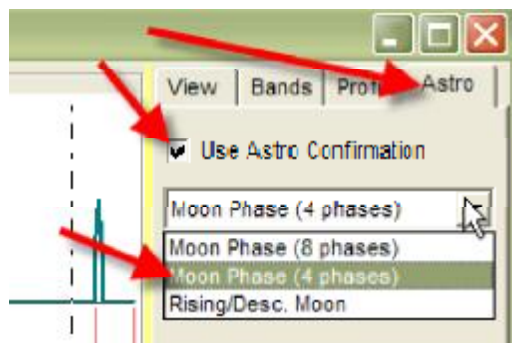
Thus we can find the most influential ratios statistically and see the actual ability of classical ideal ratios (like Fibonacci).

Astronomical Model

There is one more option related to astronomy. Regarding many sources, the Moon phases have impact on stock market, and we can use them in our analysis. Setting these options:

we ask the program to use NOT ALL turning points but the turning points that occurred on the same Moon phase. In other words, we assume that swing structure depends on the Moon phases. In the light of the Moon, the next target looks like this:

Here we use the 90 degrees for each phase division as the whole Moon cycle consists of 4 major phases. Also we can use the classical 8 division and use the rising/descending Moon as well. Remember that the usage of 8 phases division requires much more price history. We recommend to watch "Sample Size" parameter:
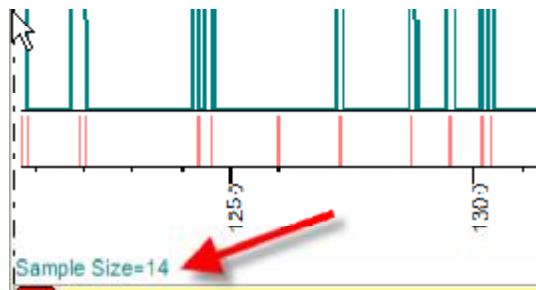
This is the amount of "legitimate" turning points used for the statistical analysis. The usage of 8 phases division makes this parameter approximately two times less.
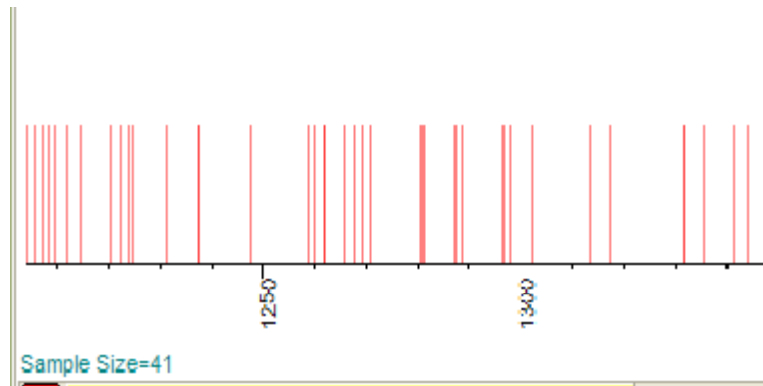
...Options

The "View" options allow varying the presentation of results:
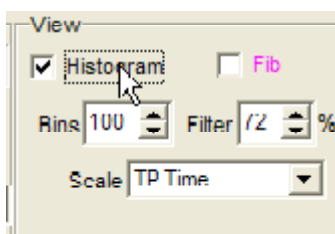
When **Histogram** option is checked, the histogram reveals high probability zones. In the case when we analyze long term swing or our price history is not long enough, we would recommend disabling this option. As in the picture below, we are able to see all 41 analyzed turning points as vertical stripes:

Sample Size=41

Each stripe corresponds to one analyzed turning point.

Bins serve to vary the amount of bins in histogram. The more bins the more detailed the histogram is. We can vary this option to make available clusters more apparent.

Filter allows to exclude extreme points. Some swings are too high or low, and we can exclude them decreasing this filter parameter. Sometimes this parameter has impact on Main Window view.
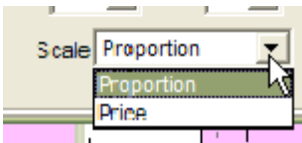
Sometimes it looks this way (we have analyzed short term swings in this example):

The price scale is too wide for our price data. Decreasing Filter parameter, we will exclude the extreme points from high probability histogram, and this window will look more appropriate:
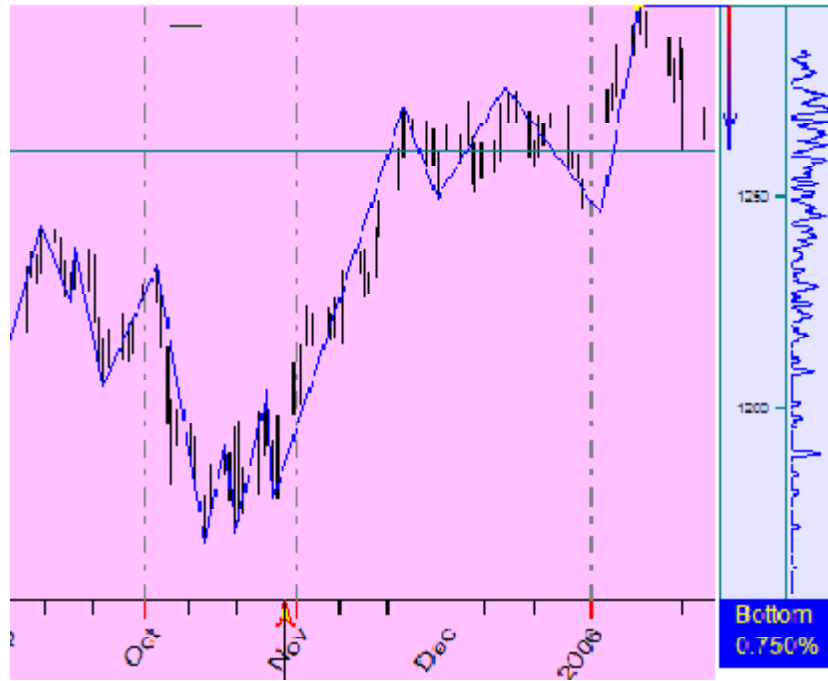
Scale: we can display the high probability zones using ratio scale and real price scale:
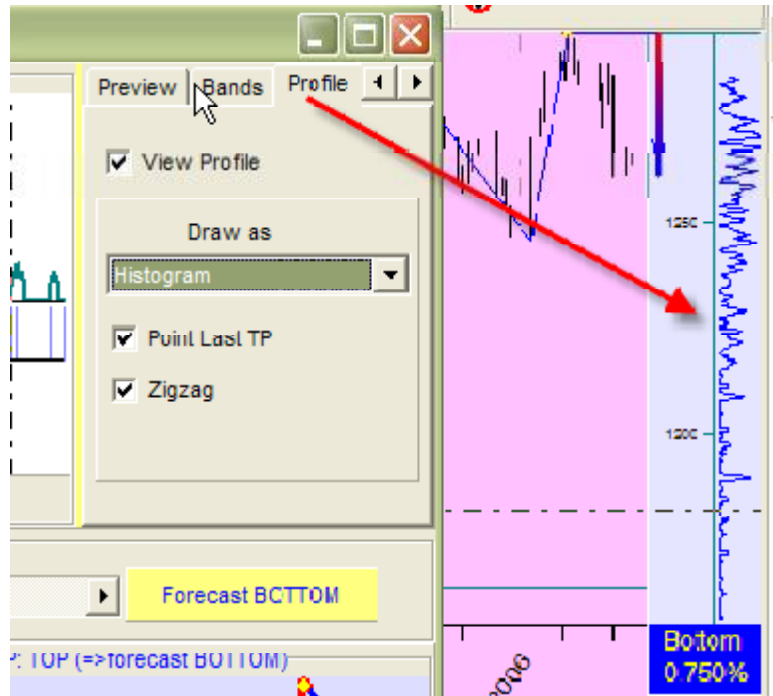

Choosing "Proportion", we can present the histogram this way:
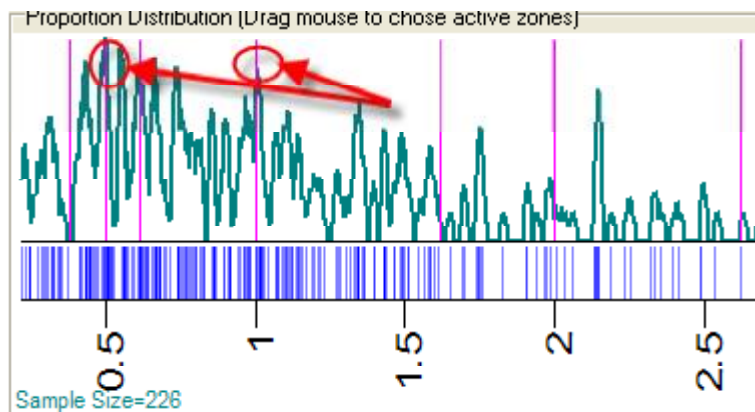
Here you can see what ratios between downtrend swings and uptrend swings are most typical for short term zigzag (0.75%). As you see, at least ratios 0.5 and 1.0 are presented. The other choice allows to see these proportions converted to price.

**Profile** options control the view of profile in the Main Window:

Try to vary these options and see how the view of the Main Window will change. Very often the "Colored Diagram" looks better than the simple histogram:
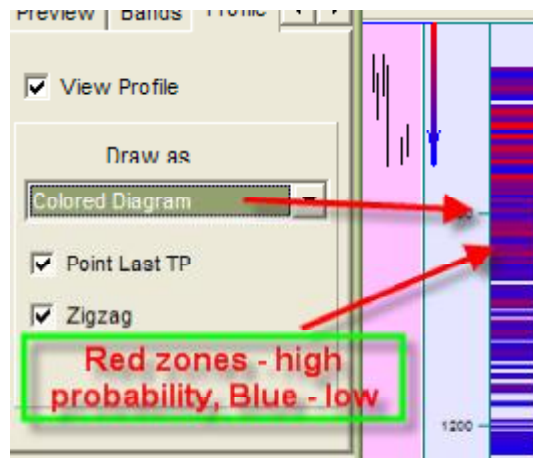
Here red zones correspond to high probability zones while the blue ones show low probability.

Band tab allows manipulating with active zones created before:
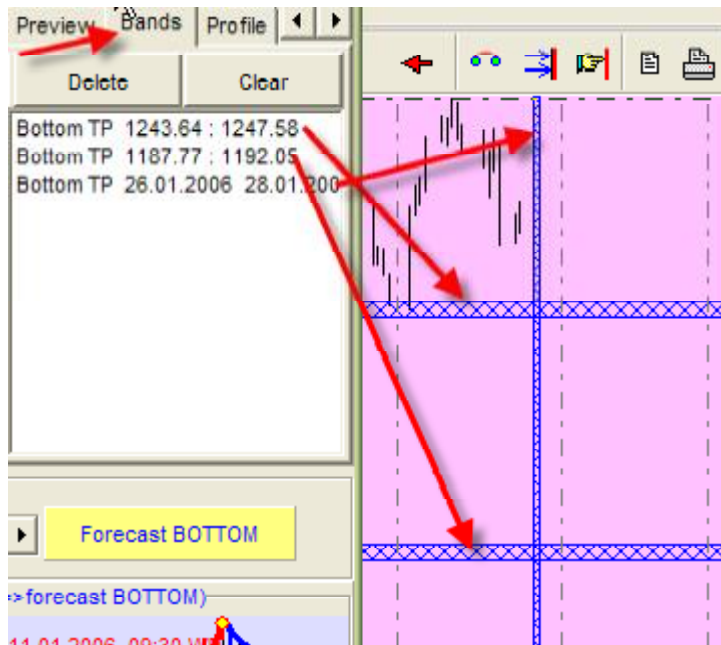
You can delete any zone or delete all of them.

Main options allow to synchronize the mouse cursor position at the high probability histogram in the Main Window:
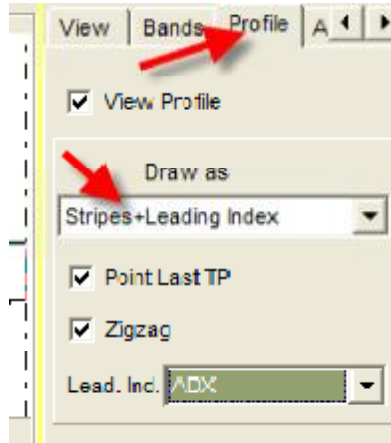

When you move the cursor over the histogram, the appropriate price or time marks are displayed in the Main Window:

Leading Index: there is a possibility to use this technique together with technical analysis indicators. Let me show you just one example. Set these parameters in Profile tab:

Look at high probability diagram in the Main Window:

Now the program displays the price levels corresponding to previous turning points ratios as red stripes, but these stripes have different height. The height of these stripes corresponds to the value of ADX index at the turning points. The red vertical represents the last value of ADX index per downloaded data. This way we are looking for the double analogy between future turning points and previous ones - the analogy in market geometry and technical analysis indicator. When some red stripe reaches the last fixed ADX value, it means that this index now is equal to its previous fixed value.

For example using Percentage Volume Indicator (PVO):
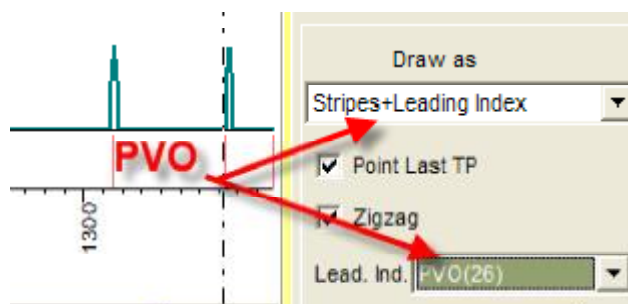
you can take into account the volume and see it right on the Main Screen. Like this:

Here at the price level 4022 we have turning points cluster from one side and, from another side, the Percentage Volume Indicator (PVO) corresponding to one of these turning points is very close to the last PVO value.