Observe what happens when we change the look back period to 10 days. Immediately, we notice that the large moves at (A) and (B) are still included in the look back that is calculated on the second day.

As shown by the chart, the amount that the oscillator changed (E) and (F) is much less when the look back period is extended to 10 days because the oscillator for both days is looking at the price before the large move. The oscillators continue to drop at (F), where in the 9-day look back, the oscillators actually increased in value. It is interesting that the price of silver actually dropped a tenth of a cent on this day! This is a major problem when using these simple momentum oscillators.

Because of its construction, the RSI dampens or smoothes these distortions. Here are the same charts with a 9-day and 10-day look back period of the RSI.
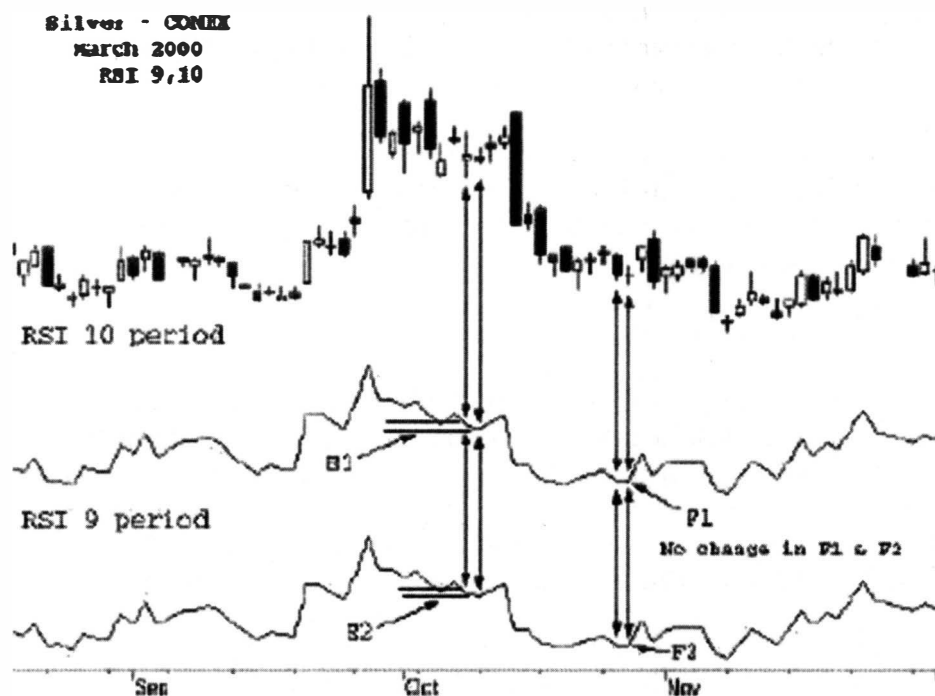
The vertical distance the RSI value moves (E1 vs. E2) and (F1 vs. F2) remains basically the same if the large moves are included or not included. This allows us to place more significance on the actual values of the RSI. The Relative Strength Index is always contained within a vertical range that runs from 0 to 100. This saves us the trouble of constantly referring to past indicator values when determining overbought or oversold levels. This problem occurs because typical momentum indicators values are not contained within a predefined vertical range.

When discussing the RSI, most books on technical analysis typically use a 14-day look back period for their calculation. It should be noted that a longer look back period makes a less sensitive RSI oscillation. When a smaller look back period is used, the amplitude of the oscillation increases. I prefer to use a look back period of 14 days or time periods. This look back works best in all time frames and is one half the lunar cycle for daily data.

For intra-day time frames, some traders use a 9-period look back. In gold, silver, crude oil and the financial markets, a 25-day look back period performs well. There seems to be a 50-day cycle in these markets and a 25-day look back is half the cycle length. It is important to realize that the Relative Strength Index formula requires at least 90 time periods of data to provide valid results. Otherwise, the formula will not yield accurate results for trend analysis. When I look at daily charts, I prefer to have at least 200 days of data to trust the validity of the RSI data.

An important fact to remember is that any oscillator, the RSI included, will become either overbought (bull market) or oversold (bear market) in a strongly trending market. Consequently, the momentum indicator or oscillator will remain oversold or overbought for quite a while.

DETERMINING THE RSI RANGE

An up trending market will typically find support at the RSI value 40 with effective resistance at the RSI value 80. A down trending market will find resistance at RSI value 60 with effective support at RSI value 20. Often, a primary indication that the trend has shifted from bearish to a possible bull market occurs when the RSI that previously respected the 60 level rallies up to an RSI value of 70 or higher. When the inevitable decline occurs, the RSI will respect the RSI value 40 before rallying again.

In an 80/40 range (bull market), you will see the RSI make higher highs and higher bottoms, which is a classic indication of a bull market! Similarly, in a 60/20 range (bear market), you will see the RSI making lower lows and lower tops. Recognizing this RSI behavior is very useful when looking at a futures or stock chart. Inspecting the range that the RSI is moving in provides the first clue that indicates the trend direction. The RSI finds resistance or support at previous tops and/or bottoms in the RSI values themselves. Old resistance points can become new resistance points and if broken, become a new support level upon a retracement. Old support levels can prove to be effective support again and, if broken, prove to be effective resistance.

Here is a longer term Japanese Yen chart:
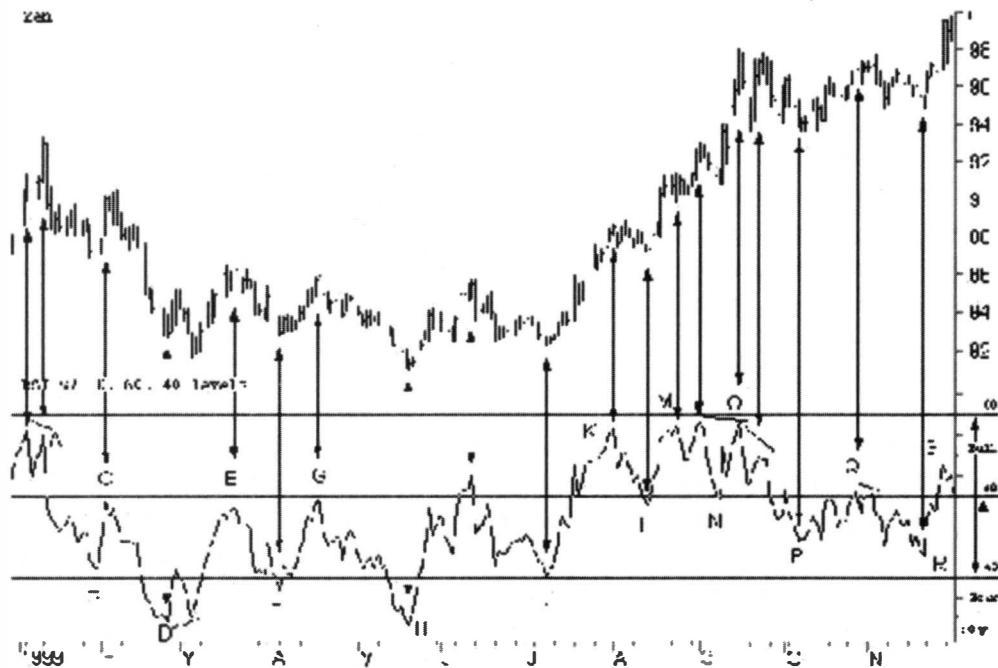
At (A) there is a small bearish divergence indicating that the prior uptrend is about to take a detour. Prices decline to (B) where the market finds support at the RSI 40 level. The rally to (C) is the first hint that a trend change could be coming, as the RSI 60 level proves to be effective resistance. The decline in prices to (D) violates the previous support line at 40. At this point, it becomes apparent that what should have been support has failed. RSI value 60 was effective resistance at (C) and these two elements combined point to the fact that the trend has probably changed. The price rallies a bit after (D) before faltering and declining to a new low. However, the RSI value fails to make a new low. Instead, it makes a bullish divergence! At this point, we can safely say that the previous bull market has died! Our opinion is strengthened with the RSI level of 60 at (C) proving to be resistance and the 40 level failing to provide support in the decline from (C) to (D) plus a bullish divergence. The point where the Bulls got excited about the bullish divergence is where we should be looking for a place to get short!

The rally to (E) respects the RSI 60 level before dropping to (F). However, the RSI does find some support at (F). This indicates that the Bulls might be preparing to rally prices. When the rally falters at (G), we can safely assume that the bear market is

still in effect. The low at (H) was not followed by a bullish divergence, which is a minor indication that a trend change could be coming. This was confirmed to some degree at (I) when the RSI managed to rally above 60 to 64.93 before dropping back. Our suspicions became more valid as the decline to (J) found support at the RSI 40 level. This was similar to the RSI finding resistance at the 60 level at (C). The rally to (K) violated the RSI 60 resistance level. The decline at (L) which found support at the RSI 60 level confirmed that we were back in a bull market. In fact, just as we were looking for a place to get short the market prior to (E), we should now be looking for a place to get long prior to (L). Remember, the RSI tends to find support (L) at old resistance levels (C, E, G, H) in a bull market.

In any case, the rally to (M) met resistance at the RSI 80 level. The subsequent decline to (N) found support at the RSI 60 level. Notice that this is the second time that the RSI 60 level has acted as support. This behavior by the RSI indicates that we are in a strong bull market. This would be similar to the RSI 40 level acting as resistance in a bear market. In fact, after the bear decline to (D), the market rallied a bit finding resistance at the 40 level six days later (a six-period bullish divergence).

Following the rally from (N), there was a bearish divergence at (O), followed by another divergence a few days later. The decline in prices to (P) was followed by a warning that the trend could be changing, which came at (Q) as the RSI found resistance at the 60 level with a small bearish divergence that led to a decline to (R). The explosive rally to (S) provided a strong indication that the bull market was still alive and well.

It is interesting to note that (S) is a longer-term bearish divergence against (O). The first indication by the RSI that the bull market in Yen has ended will be the 60 level acting as resistance followed by a violation of the 40 level – or the price negating the 40 support level without first encountering resistance at the 60 level.

DETERMINING SUPPORT & RESISTANCE LEVELS

It is important to look for support and resistance levels on both the price and RSI charts. I look at the RSI chart to determine at what price and at what level the RSI found effective resistance and support. In an up trending market, the charts reveal that current support levels were former resistance levels on the price and RSI chart during previous days and weeks. In a down trending market, the charts reveal that the price or RSI values will eventually violate former support levels. As a result, these former support levels were transformed into current resistance levels by the down trending market behavior.

LOOKING FOR A DIVERGENCE

A very significant clue that the trend is changing occurs when a divergence is present. A possible bullish divergence occurs when the price makes a new low, but the momentum oscillator fails to also make a new low. It becomes a valid bullish divergence when the price turns up from the low and the oscillator also turns up. A possible bearish divergence occurs when price makes a new high, but the RSI fails to make a new high. It becomes a valid bearish divergence when the price drops.

I hinted at this in the above section. What I am about to say next will shock traditional traders. Whenever I see a bearish divergence, I immediately start to think that we are in a *BULL* market. Whenever I see a bullish divergence, I start to think that we are in a *BEAR* market! I know that this flies in the face of what the textbooks say. Remember, as traders, we want to detect the moment the market might change its direction. The important point is that in the *majority* of the cases, my claim is very true.

You will find repeated bearish divergences only in an uptrending market. Similarly, bullish divergences will only repeatedly occur in a bearish market. If you find this hard to accept, find a chart (weekly, daily) of the Japanese Yen, and start looking at what the RSI did from July 7, 1995 to July 7, 1998. You will be hard pressed to find a bearish divergence in the daily chart and there is no bearish divergence in the weekly chart! Detecting a divergence is one of my favorite tools.

This next chart displays how stock prices and futures prices behave the same. Notice how the 80/40 RSI levels were respected by multiple bearish divergences, but no bullish divergences! The CISCO stock experienced multiple Bearish Divergences and the price continued to rally. Bearish Divergence usually occurs in a BULL MARKET!

Cisco
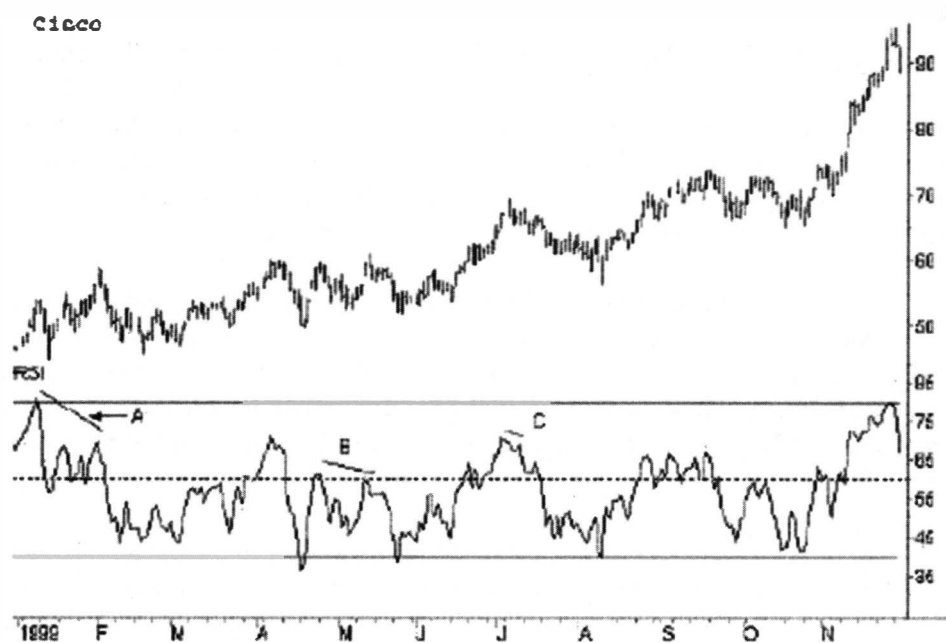
Think of a divergence as a detour. The overall trend will resume once the price gets past this temporary resistance or support area. Divergences are always associated with momentum-based indicators and typically shows up at the momentum high or low. For example when a bull market is overbought, there will be a correction. Before the correction, there will be a loss of market momentum. When a bearish divergence occurs, the market is telling you that it is overbought or overextended. When this occurs, you might want to take partial profits on your long position, because prices could be preparing to take a detour! Remember that the bearish divergence that occurs during the bull market is not telling you to get short!

Cisco Stock

A divergence takes a certain number of days to form. The strength of a divergence is based on the length of the formation time period. Calculate the period of a divergence as follows: the above Cisco stock chart prices have been advancing into late April (A), making a high close at 'x'. The price and RSI are both making new highs (A). For the next 8 days, both price and RSI drop with neither going higher than the previous value at 'x'. Following this decline, both price and RSI reverse direction and rally for four days. At the close of the fourth day of this short rally, the price is higher than it was 12 days earlier at 'x'. But, the RSI is still lower than its previous peak. Consequently, there may be 12-day divergence during the 2nd week of May.

At this time, it is a possible or 'tentative divergence' because to become a 'locked in divergence,' the price has to drop. It is the dropping price that will prevent the RSI value from exceeding 'x', and will "hook" the RSI over or turn the RSI value down, making the divergence real. It is important to remember that until the RSI value actually drops under its previous value, this remains a 'tentative divergence' because the RSI value could exceed the 'x' value if prices continue up negating the divergence. This means that we must wait one day or one period of time to confirm a valid divergence according to the definition.

Our next example (B) shows a 4-period divergence. The duration of a divergence is important. A two to six day divergence usually indicates that a detour in price is more likely than a longer period. A longer divergence period of weeks and even months, if using daily charts, is usually less indicative that a price detour is coming. The most powerful divergence occurs during a 2 or 3 period divergence. In the overall context of RSI applications as a trading tool, the divergence signals are relatively minor. I enjoy using divergence to detect what the overall trend is. Divergence is very useful in deciding where to take partial profits in multiple contract positions.

Using Moving Averages

Another tool that I use to indicate trend is moving averages. This is the standard workhorse tool used by most technical traders. Moving averages are valuable because they remove the volatility from the data series. For example, calculating a moving average based on the RSI effectively removes the volatility from the RSI calculation and yields a smoother signal. In fact, the trend can be confirmed by calculating a 9-period simple moving average (SMA) and a 45-period weighted moving average (WMA) on the RSI and price. When the:

1. The 9-period on price is above the 45-period on price, and
   the 9-period on RSI is above the 45-period on RSI the trend is *up*.
2. The 9-period on price is below the 45-period on price, and
   the 9-period on RSI is below the 45-period on RSI the trend is *down*.
3. The 9 period on price is above the 45 period on price, and
   the 9-period on RSI is below the 45-period on RSI the trend is
   sideways to up.
4. The 9-period on price is below the 45-period on price, and
   the 9-period on RSI is above the 45-period on RSI the trend is
   sideways to down.

Since the RSI is more volatile than price, the 9-period simple moving average (SMA) of the RSI will cross its respective 45-period weighted moving average (WMA) before the 9-period moving average (SMA) on price will cross its respective 45-period moving average (WMA). I place more emphasis on the moving averages based on price than those based on RSI. By remaining aware of what the moving averages are doing will help you to stay focused on the overall trend. When I am talking to another trader, I will often say that the moving average on price is positive. This implies that the short-term 9-period SMA is above the longer-term 45-period WMA. The largest moves frequently occur when both moving averages are moving in the same direction.

One more thought on moving averages. You will find that the 45-period weighted moving average (WMA) will prove to be support or resistance on price and the RSI. For example, you will often see a bull market retrace to its respective 45-period weighted moving average in price and/or RSI. When this is observed it is another sign of what the trend actually is.

Here is an example of the U.S Treasury 30-Year Treasury Bond:
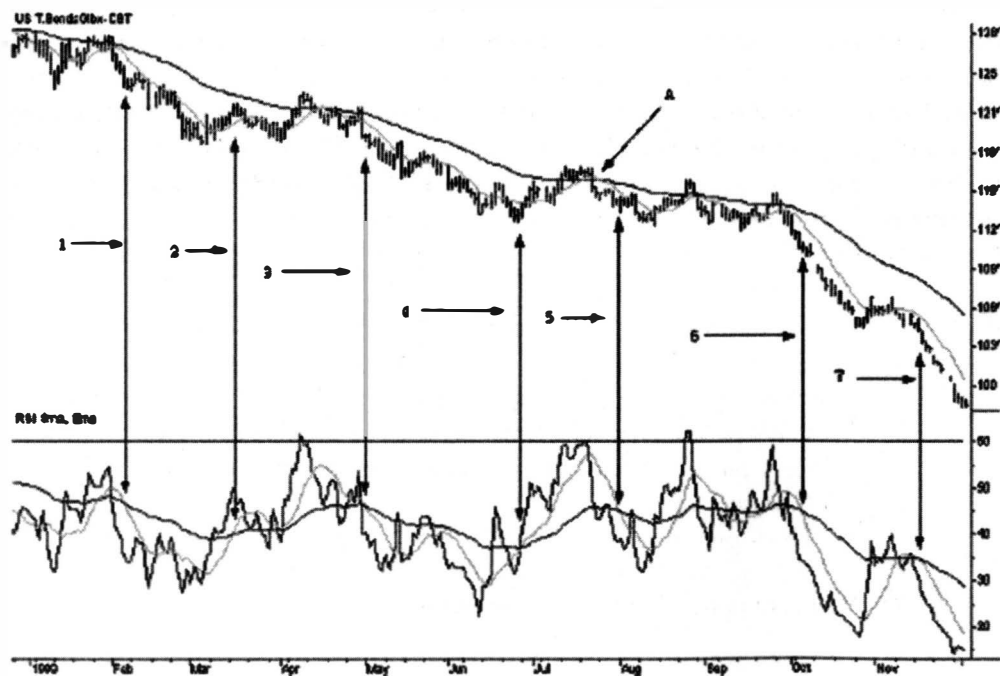
From looking at this chart, it is obvious that the trend had been down since the beginning of 1999. However, by applying the previously discussed rules, we can see the following. At (1) with the close at: 124^14, the price found resistance at the 45-period moving average (the red line). Also, notice that the 9-period moving average (the green line) on the RSI crossed under the 45-period moving average resuming the downtrend. At point (2) (122^09), the trend changed to 'sideways to down' preventing us from looking for a place to get long. Instead, it forced us to look for a place to get short.

This became obvious at point (3) (120^04), where the trend went back to 'down.' The trend shifted back to 'sideways to up' at point (4) (114^20). After the rally to (A), many traders began to believe that the price would continue higher. At (A), several things occurred. First, the trend was up, as the moving average on price and the RSI were positive. Second, the RSI was unable to overcome the RSI 60-resistance level. Third, the price is not able to distance itself from the 45-period moving average on price. This is indicating that the probable direction of price would remain down. Moreover, the decline into early August showed that the RSI broke possible support at 40, indicating probable lower prices.

At (6) (111^03), the trend turned down again. Between points 5 (114^26) and 6 (111^03), the moving average went positive and negative a couple times. However, notice that the RSI continued to respect the 60-resistance level and the moving average on price continued to be negative. Then, at point (6) (111^03), the trend resumed its downward trend. At point (7) (103^19), the trend briefly went 'sideways to down.' This was a false move because the RSI was finding resistance at the RSI 40 level. The fact that the RSI 40 level had acted as support in late August was also significant. Remember that in a bear market, what was support will often become resistance on a subsequent rally. This was signifying the probability of a major downward move in price.

In conclusion, the questions that I ask myself when determining trend are:
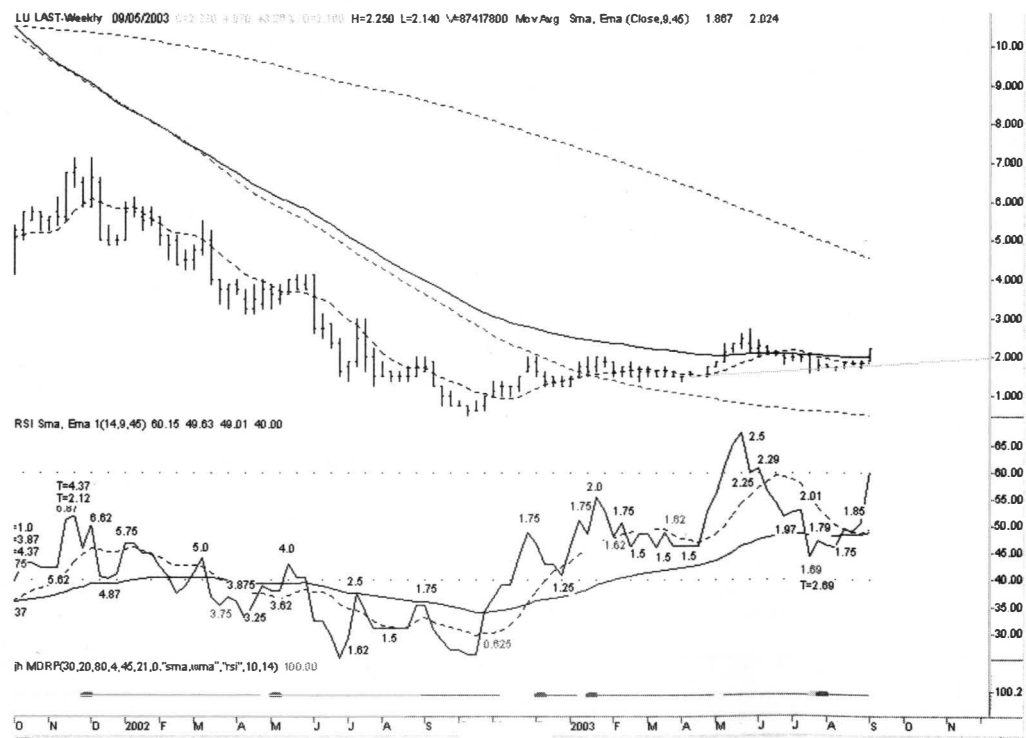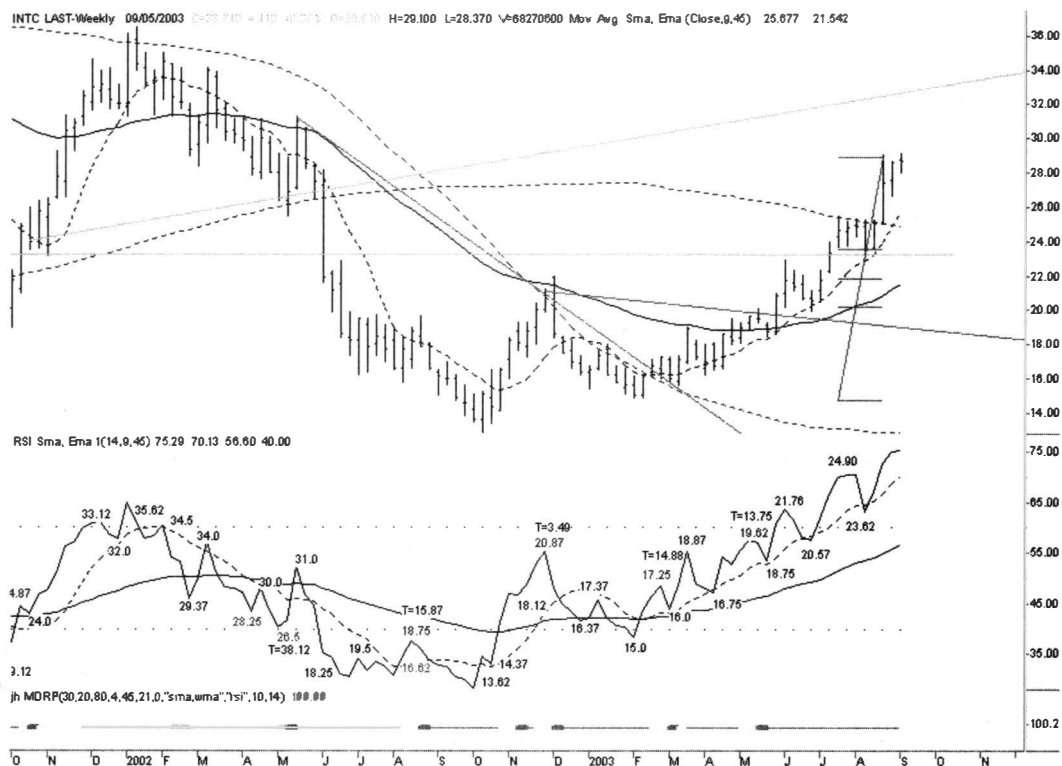1. What is the RSI range?
2. Has there been a range shift?
3. Is the market respecting its former support and resistance areas?
4. Is the market violating support and resistance areas and reversing their roles?
5. Have prices broken important trendlines in the price or RSI chart?
6. What type of divergence is present?
7. What is my moving averages showing me?

This quick checklist is how I can accurately and quickly determine the trend. My book *The 21 Irrefutable Truths of Trading – A Traders Guide To Developing A Mind To Win* (McGraw-Hill, 2000) provides more in-depth technical analysis methodologies to determine trend, when to enter and exit a trade and the psychological characteristics that successful traders possess. You can order this book at Traders Press, Inc., PO Box 6206, Greenville, SC 29606 ~ http://www.traderspress.com ~ 800-927-8222 ~ 864-298-0222 ~ fax 864-298-0221.

Appendix C

Examples of longer term charts:

ORCL LAST-Weekly 09/05/2003 C=13.080 -.640 -4.66% O=13.400 H=13.510 L=13.000 V=77520512 Mov Avg Sma, Ema (Close,9,45) 12.262 11.993

Appendix D

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The charts used in this book were created with **EpsilonCharting**. This is a charting program that Mr. Hayden is developing for professional traders.