SENTIMENT INDICATORS

Renko, Price Break, Kagi, Point & Figure— What They Are and How to Use Them to Trade

Abe Cofnas

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This book builds upon the knowledge gained from working with my students all over the world. Through them, I gained a deeper understanding of the role of emotions in markets and analysis.

A special note is due to my wife, Paula, whose support during the research and writing of this book was indispensable.

Contents

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Introduction

THE PURPOSE OF this book is to give beginning and more experienced traders a fresh look at the principles and applications of alternative charting types. These charts share one significant attribute: they display information independent of time. These types include price break; Kagi; Renko; point and figure, and cycle charts. These charts are important because when the trader applies them correctly, they provide different views of the shape of market sentiment as well as the shape of trends. The hoped-for result is that they will give the trader an enhanced ability to detect changes in price action. The use of these charts can have a significant impact on trader fitness levels, which most traders are looking to improve. (There are very few traders that cannot improve their performance.) There are even fewer that are consistent. A huge trader training industry supplies a seemingly unending stream of content and tutorials, in seminars and on the Web, with the goal of assisting traders. The search for new tools and techniques is all-consuming, but the ability to improve trading does not rest on a new technique. Rather, it centers on the trader's own behavior.

In over a decade of trader training, I have found that trader inconsistency and trading losses often arise from the central error of participating in counter-trend trading, as well as timing errors. While there are many other sources of strategic and tactical trading errors, this book focuses on the critical area of measuring sentiment changes. When all is said and done about trading, all prices reflect sentiment. Being able to visualize sentiment more accurately can have a huge impact on the trader's ability to achieve a professional level of fitness. To use an

evolutionary metaphor, if traders were a species, to survive they would need to replicate successful trades, select entries and exits, and adapt new strategies to changing markets. These are all skills essential to evolving into an accomplished trader.

This book evaluates and applies price break charts, Kagi charts, Renko charts, and point and figure charts because they all provide alternative and often superior visualizations of price action. They convey an enhanced ability to measure sentiment. These alternative charts all have something else in common: they originated before the computer. Additionally, they commonly remove time as an input variable. As a result, the patterns and forms they generate act as "landmarks" and "maps" of market sentiment. Our goals are to uncover paths in these "maps" for trading strategies and tactics, and to show readers how to use these charts for their own trading.

The question arises: Why now? Why revive an understanding of chart types that have become obscure? Aren't candlesticks the accepted form and shape with which traders analyze markets? Don't candlestick patterns encode market emotion effectively? Do alternative chart types really improve projections and predictions? The short answer is that market sentiment contains within its concept many dimensions that candlesticks do not efficiently represent. When sentiment is represented only by a candlestick shape, or a cluster of candlestick patterns, the understanding of market conditions is arbitrarily confined to the shape of the candlestick. Candlesticks capture open, high, low, and close data, but they also include a great deal of "noise."

In response to candlestick noise, traders have used technical indicators to smooth out the price data and filter out the noise. Additionally, as global markets have become increasingly interconnected, extracting better understanding of market sentiment is more important than ever before. In the current globalized markets, the ability to compare different market information effectively can positively affect profits. Hence, the value-added potential of applying alternative charting to price data and also to the important area of consumer and business surveys is more important than ever before. Being able to detect a change in price action or project a key area of resistance or support not otherwise detected provides an edge to the trader. By using these alternative charts to project key landmarks, locations of resistance or support, or reversal points in the price action, the trader gains confidence in shaping trading

strategies and tactics. The resulting directional decision and trade entry should improve. Price break charts, Kagi charts, Renko charts, and point and figure charts all provide different degrees of enhanced confirmation about the direction and strength of a trend. Used correctly, these charts will reduce traders' reliance on subjective opinion about trends and trend detection. Too much of technical analysis is not quantifiable or evidence based. We hope that the approaches in this book provide new ways to evaluate trends.

It is also our hope that this book will also promote research into new forms of constructing alternative charting with innovative features. There is great potential for embedding these charts with new features that will move us toward a "smart" chart era. Charts that track intermarket patterns, charts that detect cycle troughs and peaks, and even charts that track trader performance are on the horizon. This book is also written to stimulate new forms of technical analysis of sentiment. Charting analysis focuses on price action, without measuring the forces that move the prices. We know that words of key policy makers, central bankers, and experts influence the market. It is now possible to analyze word patterns directly, and we will show how current advances in programming can convert "words" into technical indicators of sentiment.

Ultimately, improving trading performance requires trading audits. Therefore, this book also adds a unique application to the use of price break charts, Kagi charts, point and figure charts, and Renko charts: *their use in performance analytics*. We show how traders can conduct and improve their own audits of their performance. They can gain unprecedented capability to detect trading weaknesses by comparing the path of their trades with what these charts showed about price action during that trading period.

The Decision Path of the Trader

Since this book is about improving trading strategies and tactics, a good place to begin is with a brief review of trading as a decision process. What we are referring to here is the path of choices taken by a trader leading from selection through entry, management, and exit of a trade. What we mean by *decision path* is the set of logical steps a trader follows in order to initiate a trade. First, the trader has to perform a scan of the market conditions. The decision process in trading any market should

always include a top-down logic, which essentially means scanning the "big picture." This scan includes observations about forces that are moving the markets. It includes knowledge of economic and business conditions and cycles. The next trading decision challenge, therefore, becomes choosing the instrument you want to trade. This choice is very subjective. There is no single approach that points to what one should trade. Some traders may acquire an affinity for a particular instrument for a variety of reasons that go beyond pure analysis. For example, a trader who admires Japanese culture or is familiar with Japan may simply enjoy trading the yen. A person who works in the real estate industry may choose to trade the Philadelphia Housing Index because of familiarity with the housing industry. These factors are, as we said, very subjective. There is also a quantitative approach for arriving at a decision on what to trade. We can characterize this approach as the search for an interesting pattern. The search for an interesting pattern can be quick and almost as instantaneous as a blink, or can require a longer process of deduction.

In many ways, deciding what to trade depends on what is left over after one surveys the terrain to determine what is attractive. Finding interesting patterns is equivalent to finding "landmarks" in the price action. For some, an interesting pattern may be a peak or a valley in the prices. For others it may be the shape of a set of candles. Non-traditional charts can facilitate this process. Once selection of the trading instrument has occurred, determining entry and exit points are logical next steps. The resulting trade can be a win, a loss, or a break-even. At any period of time, the trader needs to be able to assess the total performance and identify strengths and weaknesses that occurred. This leads to setting new risk controls. All of these trading steps involve choices and decisions in a context of uncertainty (**Figure I.1**).

Ultimately, trading is about making choices under uncertainty and with limited information. In the current vernacular of advanced statistics, these kinds of decisions are "gray" decisions, in contrast to "white" decisions that have complete information. Trading is therefore also about costs versus benefits. All trading requires perhaps the most costly and scarce resource of all: time. Finding efficient tools that reduce time spent in analyzing the market *and* minimize losses is a worthy endeavor. The trader's constant effort followed is to reduce uncertainty. This challenge is enormous because the market is full of noise. Prediction is

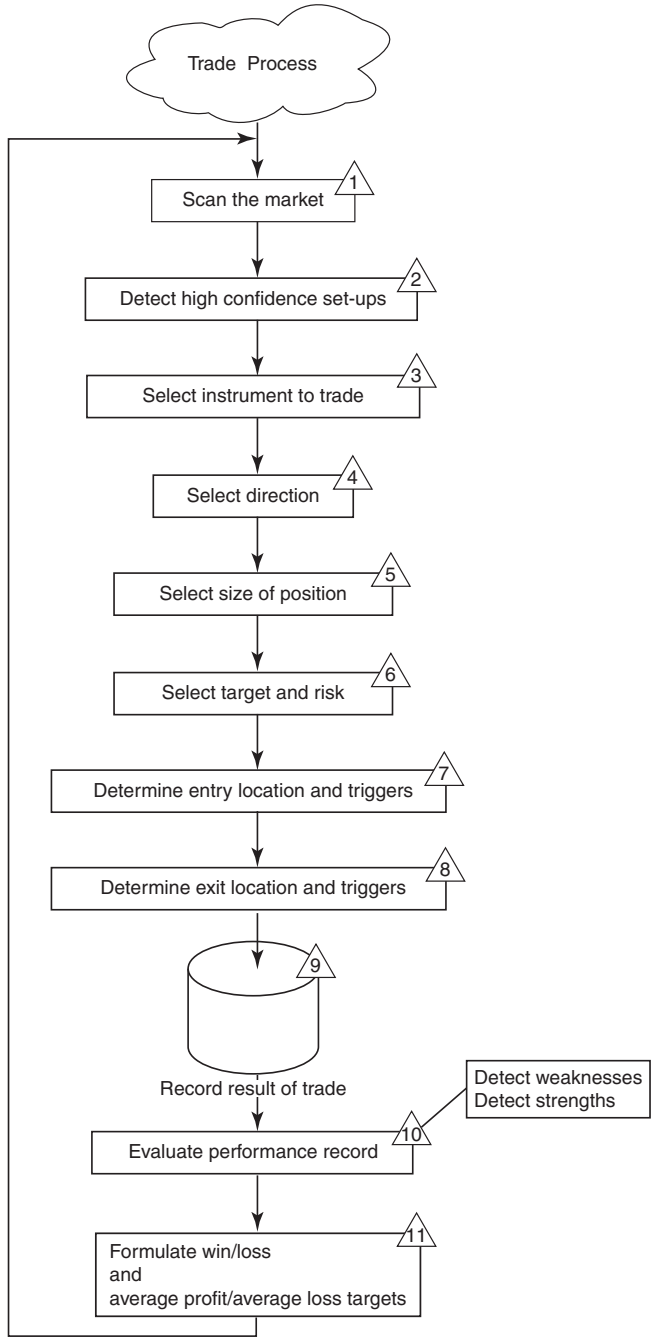

Figure I.1 The Trading Process

Source: Abe Cofnas and Sridhar Iyer

difficult and at best elusive. The trader tries to filter the noise and gain some information. All traders accept that price charting is the critical tool for navigating the market's chaotic terrain. It would be very helpful to think through the answers to these questions: What exactly are price charts? Do we really need them, and in what form? The answers may be surprising.

Price charts are a tool the trader uses to obtain an outline or contour of the price action. The raw price data is sampled from a price feed supplied by brokerage firms. The price data is usually represented as a line, bar, or candlestick. Depending on the type of chart used, the resulting visual outline of the price action will vary. Candlesticks are by far the most popular of the price charts. Line charts are effective when comparing one instrument with another. Candlestick and bar charts use the same sampling criteria, showing the open, high, low, and close. These forms of charting are by no means the only ones available. In this book, we consider price break charts, Renko charts, point and figure charts, Kagi charts, and cycle charts as tools that help the trader reduce uncertainty along the trading decision path. We will show that using these charts increases the detail (or *granularity*) of the price movement, enabling the trader to make a highly confident trade.

All of these alternative charting tools have in common two major features: (1) the elimination of time, and (2) scalability. A candlestick chart represents the price as a contour map of open, high, low, and close prices. These prices are sampled at a pre-determined time interval. A one-hour chart samples these four data points every hour, and a one-minute chart samples the data points every minute. In contrast to the candlestick method, alternative charting tools focus only on the price pattern itself, not its movement in time. Alternative charts provide an answer to these questions: Was a new high or low created? Did the price succeed in traversing a certain distance? Did the price reverse a certain distance? Time is not actually eliminated, it is an input variable, and we will see that it becomes an *exogenous* variable, or a filter.

The scalability made possible by alternative charting is also of great importance. What we mean by *scalability* is the presence in each time interval of similar patterns. Expressed in trading, the patterns at a short time interval such as one minute would be similar, except in scale, to the patterns at one hour, or one day, or one week. If patterns in trading are

self-similar, it means that the concepts of support and resistance stay the same except for where they are located. A key feature of these charts is that we can apply them to very small time frames as easily as to very large time frames.

Using alternative charting clarifies the "fractal" nature of the market. Although these alternative charting tools originated before computerization, and (except for point and figure charts) were created and used nearly one hundred years ago by Japanese traders, their potential value is only now being tapped. With the advent of near-supercomputer power at the trader's desktop and multiple screen setups that are affordable, new levels of data presentation are now feasible. The result is a new era of visual trading in which traders are able to scan and survey multiple landmarks of price action. In using these additional charting types, the trader will be able to find zones of resistance and support lines that would not otherwise be detectable.

Each chart type discussed in this book can be used independently. As stand-alone charts, they increase the trader's ability to achieve the goal of detecting a high-probable profitable setup. For example, price break charts help project next reversal points better than other charts. Renko charts are very effective for detecting early and small changes in trading sentiment. Point and figure charts are particularly effective for providing a broad view of support and resistance lines. Kagi charts have significant utility for pinpointing points of change in sentiment. (See **Table I.1**.)

Table I.1 Best Uses of Alternative Charts

Type of Chart	Best Use in Trading
Price Break Chart	Detecting beginning of trend Projecting next reversal points Confirming cycle turning points
Renko Chart	Detecting micro changes in sentiment and momentum
Point and Figure Chart	Perceiving overall resistance and support lines Projecting breakout ranges Balancing bulls and bears
Kagi Charts	Timing of turnover of sentiment
Cycle Charts	Projection of future turning points

Source: Abe Cofnas

What would happen if we could integrate all of these charts and present their "signals" in a single table? The result would be simultaneous generation of multiple views of resistance and support lines, as well as alternate entry and exit locations. This method allows each chart type to generate confirming indicators for the trader. It is a premise of this book that the best way to use price break charts, Kagi charts, Renko charts, and point and figure charts is not as substitutes for candlesticks, but rather to use them in tandem with candlesticks and with a combination of technical indicators.

This book advocates using all five charting methods together to generate enhanced confirmations of key price points. We have developed and present new ways of organizing, quantifying, and interpreting the data to assist in analysis of price action from the perspective of these different charts. This is a departure from current practice, where analysts and traders focus on one type of chart at a time, with no interchart analysis. Consequently, discussions of alternative charts have mostly been limited to the analysis of trend, support, and resistance lines related to a particular chart. In the approach advocated here, price break charts, point and figure charts, Kagi charts, and Renko charts represent forms of data mining the price action. Each chart type provides a different statistical summary of the price data in order to generate a new shape on the chart. The premise of this book is that price break charts, Renko charts, Kagi charts, point and figure charts and cycle charts can, when used together, make a distinct contribution to analyzing price action and are worthy of traders' consideration.

CHAPTER 1

The Geometry of Emotions and Price Action

THE GOAL OF this chapter is to provide an overview of the role of emotions in price action and in analyzing the market. In this chapter, we elaborate on the relationship between emotional states and market conditions and identify the role charting plays in displaying that relationship.

> A crowd-mind emerges when formation of a crowd causes fusion of individual minds into one collective mind. Members of the crowd lose their individuality. The deindividuation leads to derationalization: emotional, impulsive, and irrational behavior, self-catalytic activities, memory impairment, perceptual distortion, hyperresponsiveness, and distortion of traditional forms and structures.[1]

Let's make a key assumption that a price acts as a landmark. The question then becomes, "What is it a landmark of?" Of course, the visual path of a price shows distance over time, and as a result, the concepts and measures of momentum and volatility can be derived from that relationship itself. The structure of candlesticks and bar charts provide further landmarks. Open, high, low, and close, the four components of each chart, represent the failure and success of different emotional forces. The concept of bullish and bearish candles underscores the consensus that emotional forces provide the energy behind the price

movement, and that charting ultimately reflects the emotional stage of investors, and consequently reflects the market itself. An entire library of candlestick charts and patterns has emerged that relates the emotion associated with a particular candlestick or pattern.

But we have yet to answer a key question: What is an emotion? This is the question William James asked in his article, "What Is an Emotion."[2] This question has yet to be answered definitively. Since James's time it has occupied enormous attention from neuroscientists, psychologists, and economists, as well as spawning the new field of behavioral finance.

It is an important question for traders because in many ways the market cannot be understood without reference to the role of emotions in price action. The market is in many ways a phenomenon of emotion. In fact, there are many metaphors that have been applied to the market: It is a great ocean, a battlefield. Traders have been referred to as "gladiators" and "surfers." All of these metaphors try to capture an aspect of a market that is perhaps one of the most complex entities ever evolved by human behavior.

Perhaps the most useful approach that has arisen is the characterization of price movement as signatures of fear and greed. In reality, these terms are generic categories that try to capture variations in the emotions involved. *Market sentiment*, *risk appetite*, and *risk aversion* are among the most frequent terms used to unpack the meaning of emotions. We are all familiar with characterizations, such as "the market was surprised," that speak of the market as if it was an emotionally intelligent entity. Perhaps this assumption is not far from the truth.

The challenge, however, is to give greater shape to what we mean by market sentiment. How do we quantify it? Let's start by clarifying what we mean by *emotions* and *sentiment*, and define some key terms, before we explore how the market patterns express them. In itself, the language associated with emotions demonstrates that the subject is not simple. Words such as *feelings*, *desires*, *sentiments*, and *mood* are commonly used to refer to emotions. The concept of the market as an emotional machine, or an entity that processes emotions, is a very useful way of thinking about the market. When a price changes, it is the result of the dominance of one emotion over another. The tug of war between "bulls" and "bears" reflects the concept of an ever-present emotional conflict in the market. But market prices represent a result of millions of individual emotional decisions. Each individual decision is influenced by a set of

investment emotions and other decisions. The patterns in the charts emerge as group emotional expressions that express the "mood" of the market.

We still need to answer the question, what are emotions? At least, we need to try to answer it from an investor and trader perspective. Emotions are always about something. When an individual has an emotion, it has to relate to an "object" of emotion. Traders become excited about an earnings report or fearful of an economic downturn. The investor, trader, or money manager operates on that emotion and makes a trading decision. The motivation behind the decision is a complex web of influences that cannot be clearly deciphered. Market and sector indexes become composites of the emotional decisions of investors and institutional opinions. Prices, therefore, become mass behavioral signatures.

When a market reacts to "statements" of policy leaders or central bankers, the market is in effect an emotional being reacting to the words! That is why words move markets. As a result, the science of text mining is becoming a serious trading tool. This phenomenon is often called *herding* or *crowd behavior*. The presence of crowd behavior is now being recognized as a critical factor contributing to market crashes. Simply put, a market crash is an extreme emotional event associated with a high degree of the same emotion being mimicked. In crashes, the emotional contagion is that of uncertainty, and therefore a breakdown happens in the usual balance of sentiment between bullish investors and bearish investors. In bubbles, the emotional contagion is that of euphoria, or greed. Both represent an imbalance between the sentiments of pessimism and optimism. The precursors to crashes and bubbles can be detected in the charts as they change shape in response to changes in the mix of emotions that dominate the market. We all intuitively have experienced "the calm before the storm": high emotional states that accompany increased volatility. There is no doubt that the market speaks the language of emotions.

Where does all this complexity leave the average trader who wants to gain an edge? The answer is that any serious student of the markets or trader must gain a deeper understanding of how the role of charting provides not only a visual path for price movement, but also an emotional map. Every chart can play a role in helping the trader detect and visualize the emotional processes or stages that the market is displaying. Elaborating on the concept that an emotion must be "about something" to be meaningful, let's list the key emotions that are involved in price

movements and link them to a shape. There are nuances, of course, in looking at price as a visual path for expressing emotions. A key nuance is *temperament*. Each emotion has degrees of temperament. Measuring temperament is challenging. Multiple–time-frame analysis is one way of doing so, where by comparing charts on different time intervals, such as four hours, fifteen minutes, five minutes, one minute, or ticks, the shape and stability of the emotion can be better detected.

The set of emotions listed in **Table 1.1** is not meant to be complete, but rather to be suggestive of the key emotions that contribute to investor and trader expectations and behavior.

Table 1.1 Types of Emotions and Associated Market Patterns or Indicators

Emotion	Associated Indicator or Pattern
Fear of losses	Increase in momentum
Fear of missing profit opportunity	Early entry
Greed or excessive risk appetite	Parabolic price curve Breakaway gaps
Euphoria/exuberance	Sustained excessive momentum Sharp trend line (> 70 degrees)
Shame	Crowd behavior
Surprise	Spikes
Anticipation	Spikes
Disappointment	Retracement
Exhaustion	Retracement failure
Anxiety	Sideways channel
Doji	Multiple probes of resistance/support
Confidence	Trend channel Trend line greater than 45 degrees
Accumulation	Retracement failure–Multiple tests of resistance and support
Regret	Retracement
Frustration	Multiple probes of resistance/support
Calm/equanimity	Flags
Decreasing certainty	Triangles/wedges

Building Investor Emotional Intelligence

If emotions are important in understanding price action, then emotional intelligence becomes a requirement of technical analysis. In other words, what does an investor or trader have to know to detect emotion in the market effectively, and how can one derive this knowledge?

There are several categories of investor emotional intelligence:

- Ability to detect emotion in market patterns
- Ability to detect transitions in the emotional state of the market
- Ability to understand what emotions convey about fundamental and technical relationships

A premise of this book is that an added benefit of alternative charting is that it gives an edge to the trader in detecting emotional phases in the market. When we view charts in this context, each chart type provides different abilities to extract or detect which emotion dominated the price action. The candlestick chart **(Figure 1.1)** provides a snapshot of bullish versus bearish sentiment. A white candle shows that the bullish sentiment prevailed, and a black candle showed that bearish emotions dominated. The line chart presents boundaries of resistance and support. Price action that comes close to the line, probes it, or breaks it reveals a state of change in the emotional stage of the market. Price break charts provide unique insight on the temperament of the market; because price breaks display only a break or reversal of a trend, they are key indicators of a shift in the emotional stage of the market. One may see point and figure charts, which generate columns of Xs and 0s, as measures of emotional continuity—almost as intergroup coherence emotions. Kagi charts pinpoint turning points when yin turns to yang, or vice versa. These turning points can be viewed as points of emotional turbulence or anxiety. In this context, we can look to various charting techniques as important tools, not only for improving trading performance, but also for building emotional intelligence.

We can now begin a detailed exploration of alternative charting types and their applications.

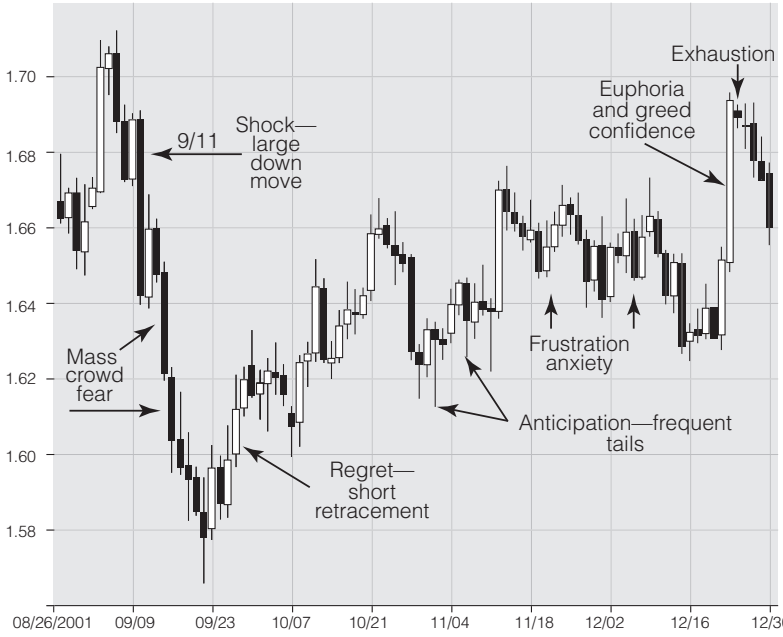

Figure 1.1 Emotional patterns and markets in the USDCHF currency during the 9/11 period

Source: Chart copyright www.ProRealTime.com

Chapter Notes

1. Andrew Adamatzky, *Dynamics of Crowd-Minds: Patterns of Irrationality in Emotions, Beliefs, and Actions*, Bristol, UK: University of the West of England.
2. Mind, 9, 188–225, 1884.

CHAPTER 2

Price Break Charts
Key Concepts

THE AIM OF Chapters 2–7 is to provide a basic understanding of price break charts, their construction, and their application in trading any market. The reader will learn strategies and tactics for trading with price break charting and analysis.

Pattern recognition is the science (and art) of inferring the nature of an object from the "pattern" of observations made on the object. Thus, given an observation, say a set of measurements from an object, one goal of pattern recognition is to categorize the object into one of several predefined categories. This basic idea is fundamental to much of science.[1]

One of the greater challenges in trading markets, even among more experienced traders, is determining when the pattern that the prices form provides a signal to enter a trade. This leads to a basic question: What is a price signal? *Essentially, a price signal is a change in the price pattern that alerts to a buying or selling opportunity*. A great deal of technical analysis literature focuses on describing what the ideal conditions would be for putting on the trade. A common phrase in trading, and a concomitant goal, is *achieving a high-probable trade*. An ongoing activity of the trader is becoming proficient at pattern recognition. The challenge is determining what kind of pattern is presenting itself to the trader. Is it stable? Are there underlying patterns that need to be detected?

For a trader to conclude that he has detected a high-probable setup, the trader needs, at a minimum, to have a confluence of all three of the following major factors:

- There is a clear trend direction.
- The price is at a key resistance or support line.
- The momentum has turned in the direction that the trader anticipates.

When these factors come together, they are considered to generate a high-probability trade. These factors apply in all markets. Traders use a wide combination of setups that include indicators to measure trend conditions, identify the strength of resistance and support lines, and detect volatility and momentum changes. Although we have not focused on these high-probable setup conditions in this book, in this chapter we will set forth a brief guide to what entry conditions would be considered high probable for a trade.

High-Probable Entry Conditions

The following checklist summarizes important criteria for identifying high-probable entry conditions. Of course, it is not exclusive, but the questions illustrate the need to integrate multiple methods of confirming trades while applying price break, Kagi, Renko, or point and figure charting. A useful exercise is to answer these questions whenever scanning and considering a trade opportunity.

A. Trend Conditions

1. Is the price above or below the day trend line in the intended direction of the trade?
2. Is the price above or below the fifty-day moving average?
3. Is the fifty-day moving average in agreement with the trend direction?
4. Is the twenty-one–day moving average crossed above or below the fifty-day moving average?

B. Reversal Conditions

1. Is the price at a day support or resistance?
2. Is the price at a four-hour support or resistance?
3. Is the price at a fifteen-minute support or resistance?
4. Is the price moving above or below a Bollinger band and then returning to its previous direction?
5. Is the price probing the Bollinger band and seeming to slide down on it, or hug it, if it is going up?
6. Do you spot a Doji candle at a support line or at a resistance line?
7. Is the price near a projected cycle turning point?

C. Fibonacci Retracement Lines

1. If price is at the key 61.8 percent Fibonacci retracement line, is it at a trend changing point?
2. Has the price penetrated the 61.8 percent Fibonacci retracement line?
3. Has the price penetrated the 61.8 percent Fibonacci retracement line and returned back?

D. Momentum Conditions

1. Has an inner trend line been generated?
2. Has the stochastic crossover occurred?

E. Risk Management Conditions for Entry

1. Is the stop loss less than 2 percent of the total cash in account?
2. Is the stop loss risk calibrated with the win/loss ratio?

This book focuses on a most important and particular challenge: detecting variations in the pattern called the "trend." Properly detecting trend conditions is integral to improving long-term trading results. It is well known that going against the trend is a major source of trading