

Week 10

Artificial Intelligence (AI) for Investments



Lesson 1: Trend Determining Techniques

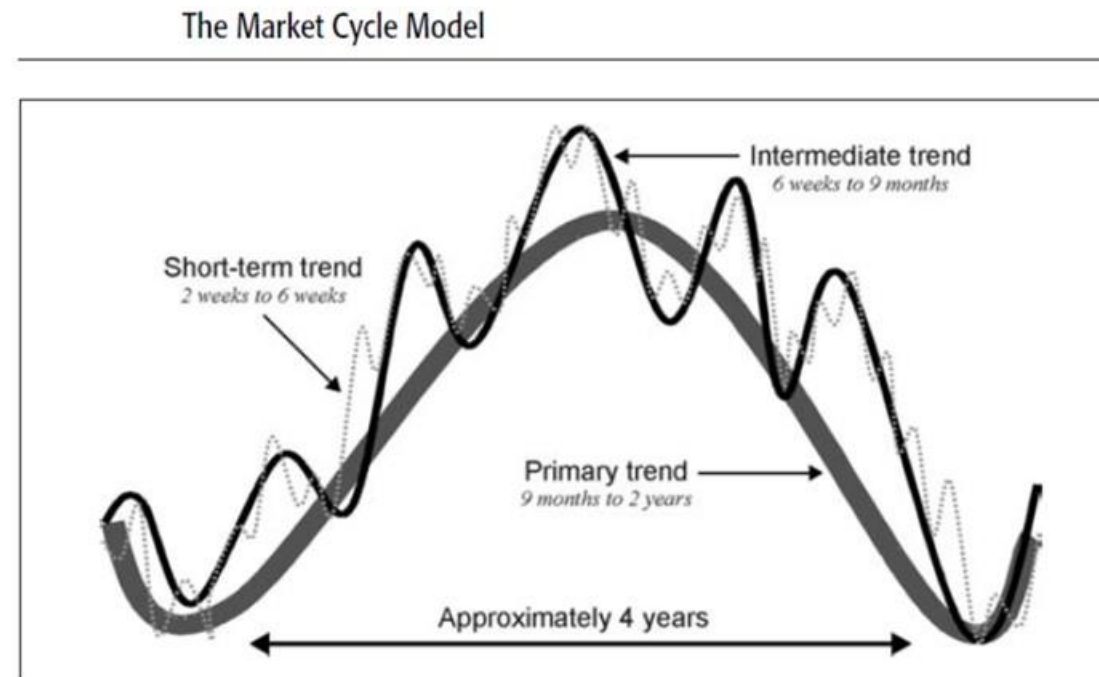
Introduction

- What is fundamental and what is technical?
- What is algo-trading?
- Supply and demand of buying and selling forces



Trend and Market Cycle

A trend is a period in which a price moves in an irregular but persistent direction



Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Introduction

- Dow theory of Charles Dow
- Major trends in financial markets
- Techniques for Identifying trend reversals
 - Intermediate cycles
 - Support and resistance zones
 - Trendlines
 - Basic characteristics and interpretation of volume
 - Classic price patterns

Dow Theory (Charles H Dow)

Dow Theory (Charles H Dow)

- Dow theory suggests that there are primary and secondary trends
- Majority of the securities are affected by these market-wise trends
- Dow constructed Dow Jones Industrial Average (DJIA) Index
- Based on the learnings of Dow, the Dow theory is proposed

Dow Theory (Charles H Dow)

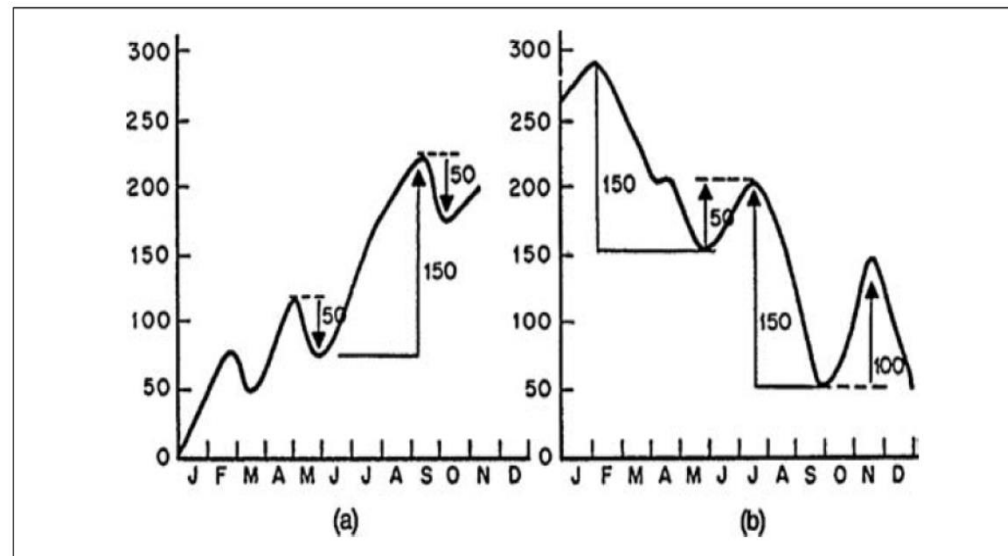
Tenet (1) Averages discount everything

- Similar to portfolio theory
- Average movements of stocks in a market captures the wisdom of the market and, therefore, the demand-supply situation

Dow Theory (Charles H Dow)

Tenet (2) Market has three major movements

(a) Primary or major trend: this is the major market movement, generally known as a bull (rising) or bear (falling) market, lasting for one year to several years

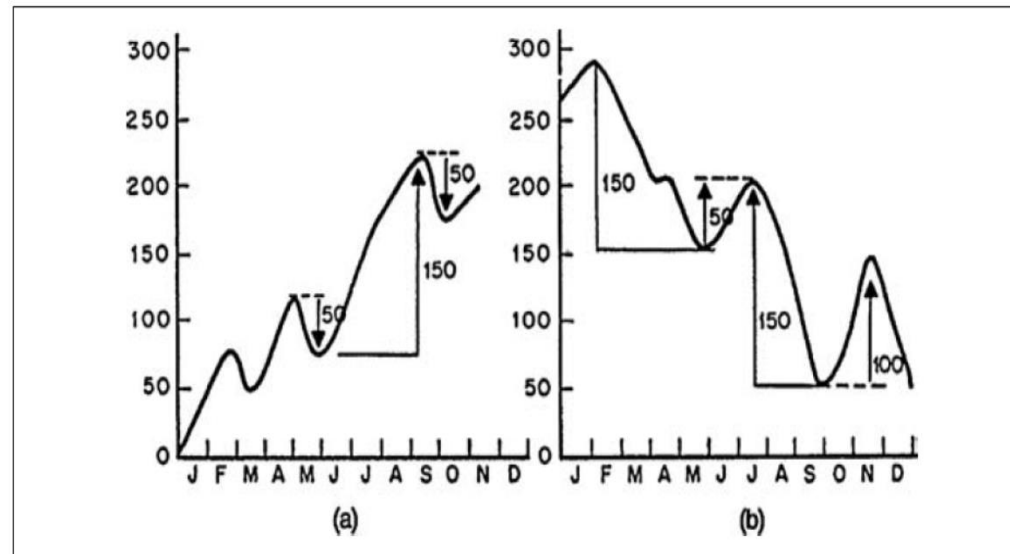


Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Dow Theory (Charles H Dow)

Tenet (2) Market has three major movements

(b) Secondary market reactions: a secondary or intermediate reaction is defined as an important decline in a bull market or advance in a bear market

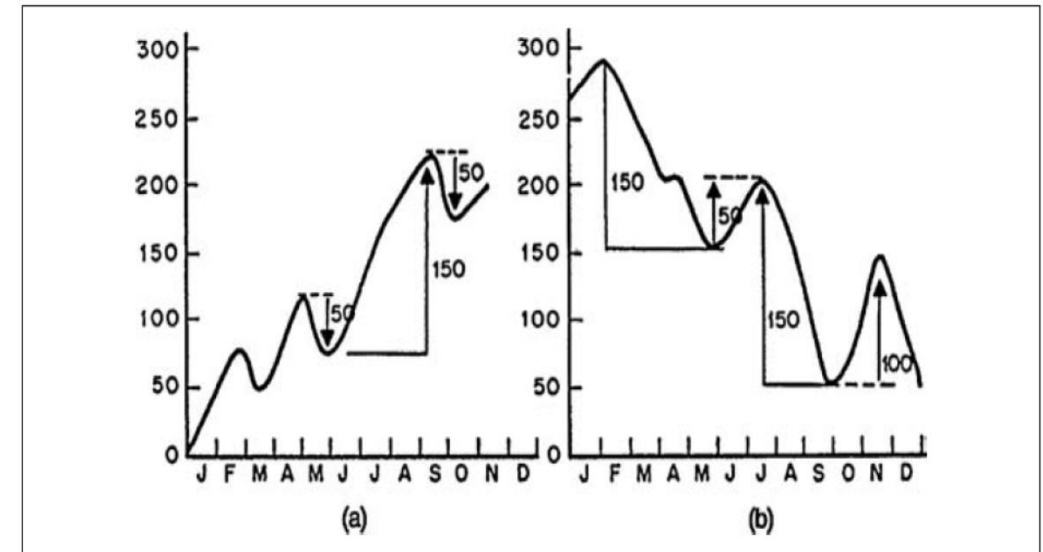


Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Dow Theory (Charles H Dow)

Tenet (2) Market has three major movements

Intermediary cycles: an intermediate cycle is a combination of one move in the direction of a prevailing trend and moves that are counter to the trend:
combination of primary and secondary



Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Dow Theory (Charles H Dow)

Tenet (2) Market has three major movements

- c) Minor movements: very short-term movements can be a part of the primary or secondary move, no-value to long-term investors

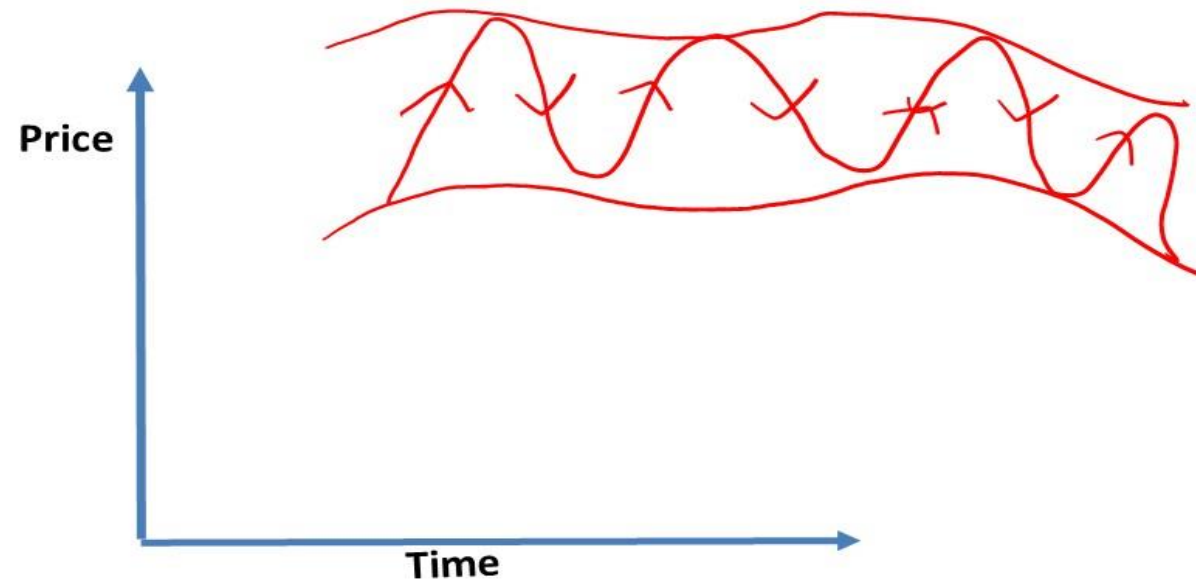
DJIA History 2017-2020



Dow Theory (Charles H Dow)

Tenet (3) Lines indicate movement

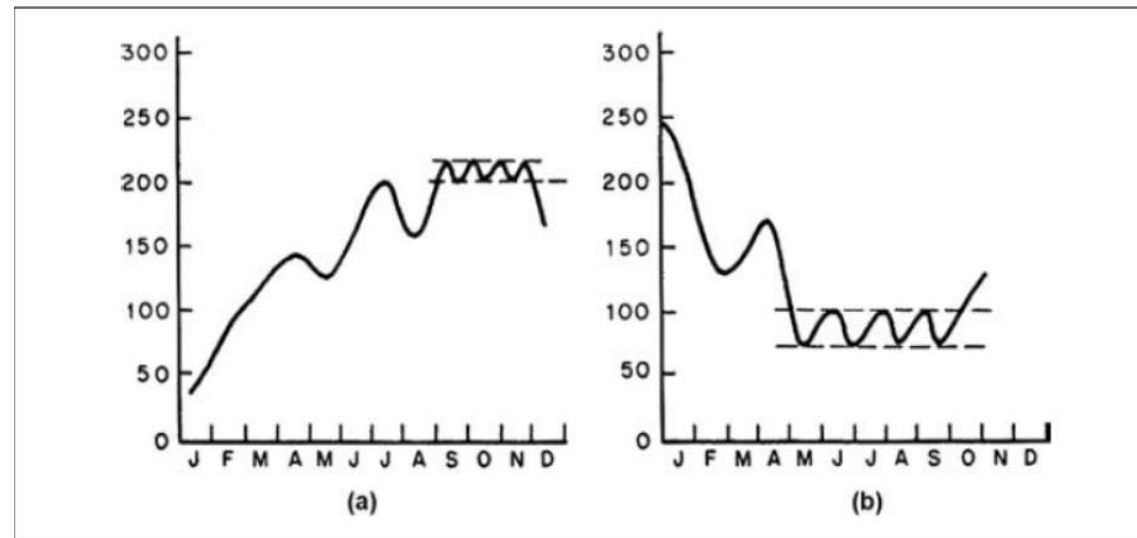
Line is defined as “a price movement two to three weeks or longer, during which period, the prices move within a small range of their mean average



Dow Theory (Charles H Dow)

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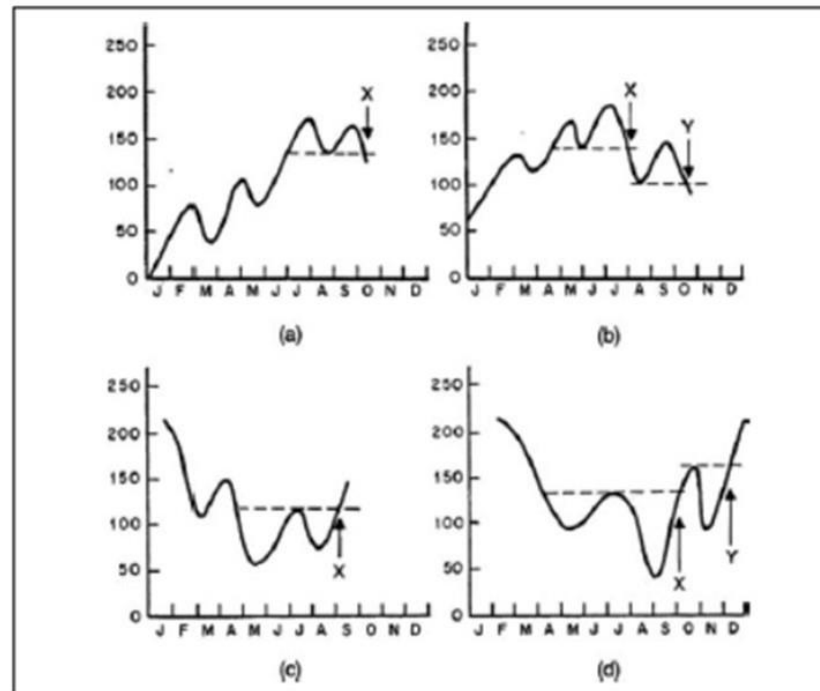
Dow Theory (Charles H Dow)

Tenet (4) Price volume relationships provide the background

- The normal relationship is for volume to expand on rallies and contract on declines
- If it becomes dull on a price advance and expands on a decline, this is a warning that the prevailing trend may soon be reversed
- This principle should be used as background information only since the conclusive evidence of trend reversals can be given only by the price action

Dow Theory (Charles H Dow)

Tenet (5) Price action determines the trend



Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

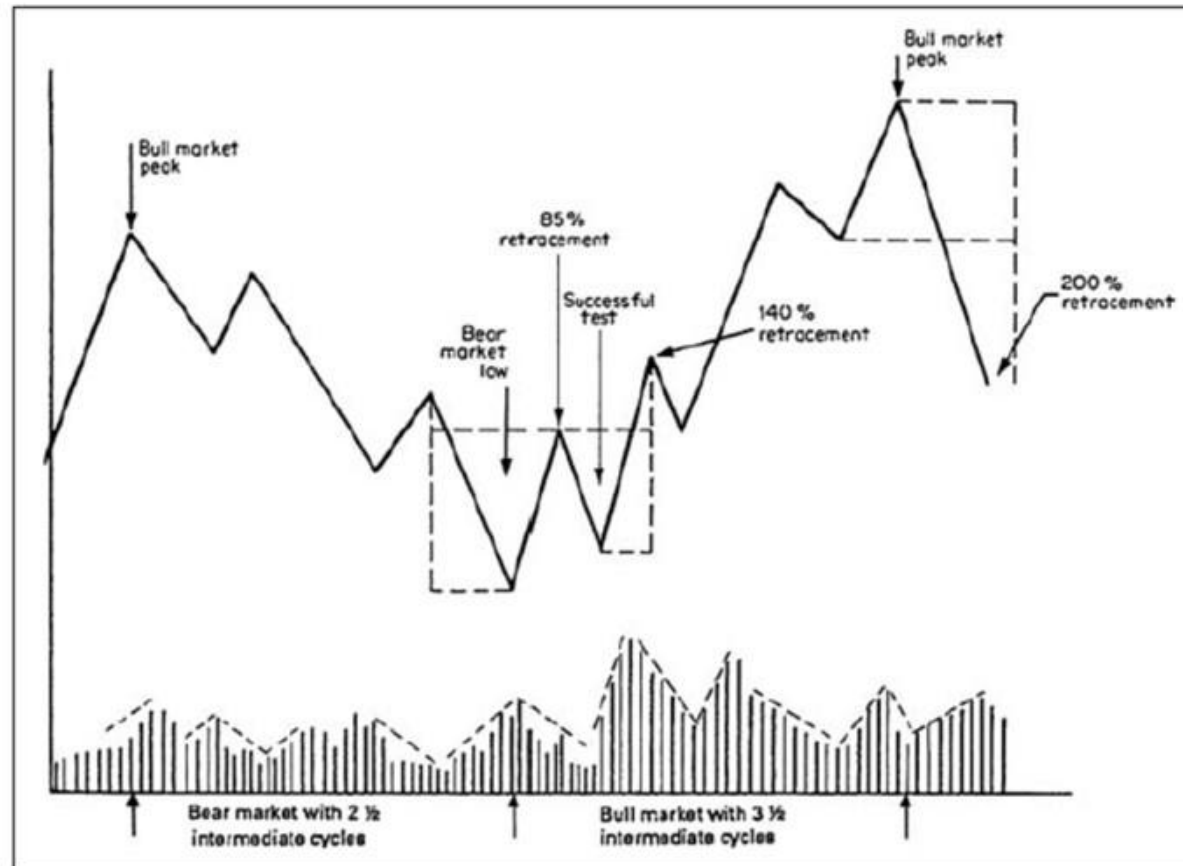
Dow Theory (Charles H Dow)

Tenet (6) The averages must confirm

The averages (broad market-wide indices) must confirm each other. The confirmation action is a more fundamental, logical, and appropriate barometer of future business conditions

Using Intermediate Cycles to Identify Primary Reversals

Intermediate Cycles to Identify Reversals



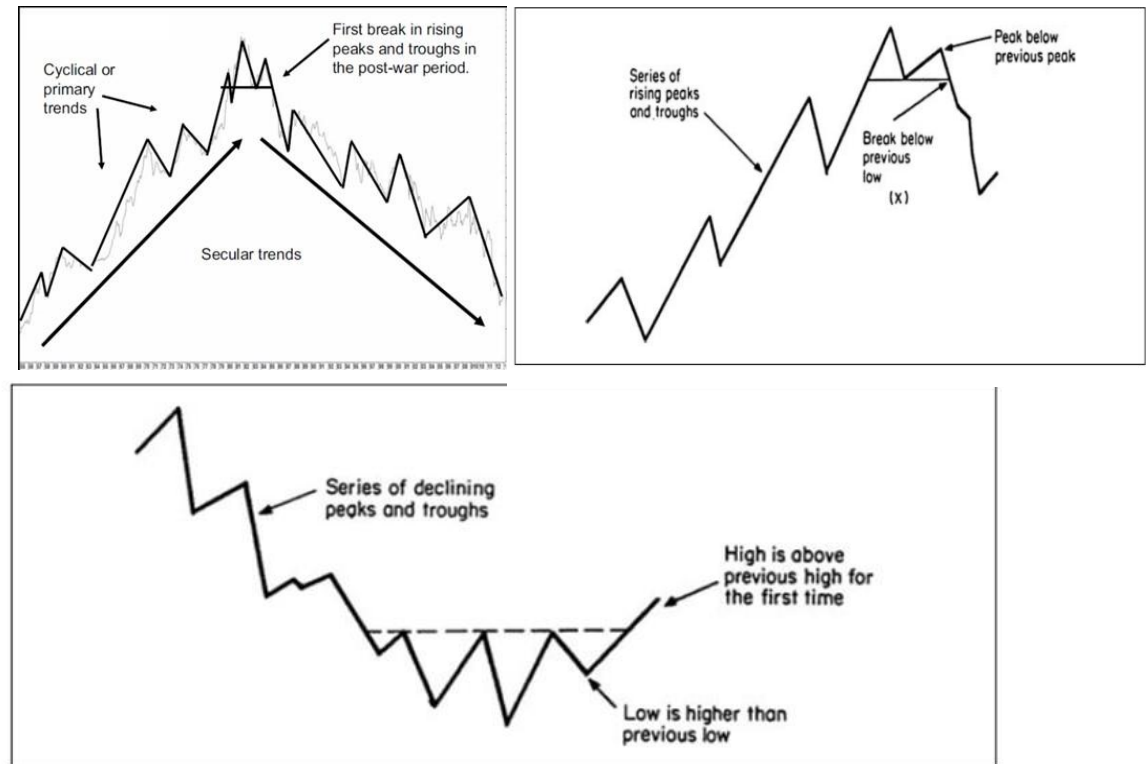
Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Identifying Trend Reversals

- Substantial increase in volume on secondary intermediate price movement (i.e., opposite to primary trend)
- Secondary intermediate movement (or retracement) is more than 60% of the primary, intermediate move
- Volume does not substantially increase or remains dull around primary, intermediate price move (i.e., along with the trend)
- The retracement is more than 100%
- Series of rising (falling) peaks/troughs is broken

Peak and Trough Analysis

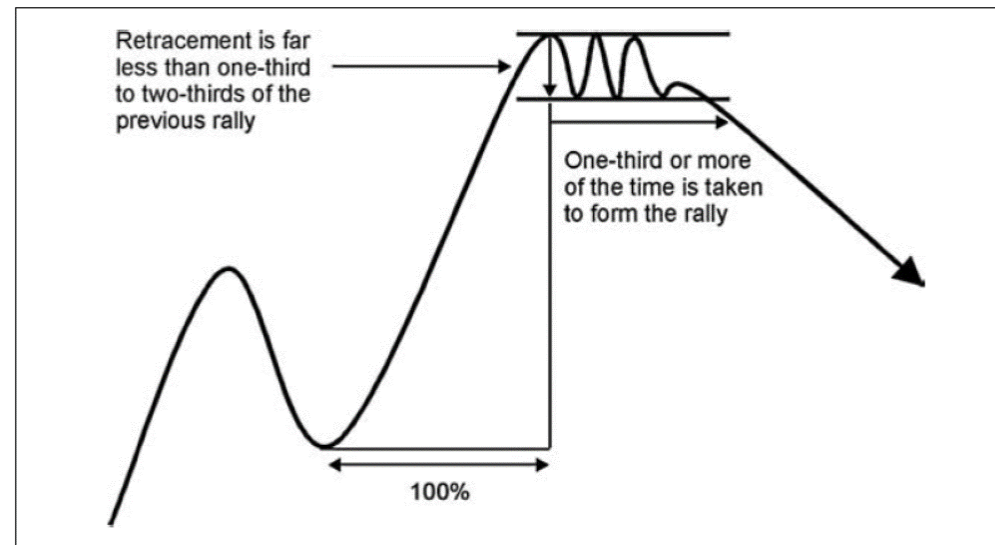
When the series of rising (falling) peaks and troughs is interrupted, a trend reversal is signaled



Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Identifying Peaks and Troughs

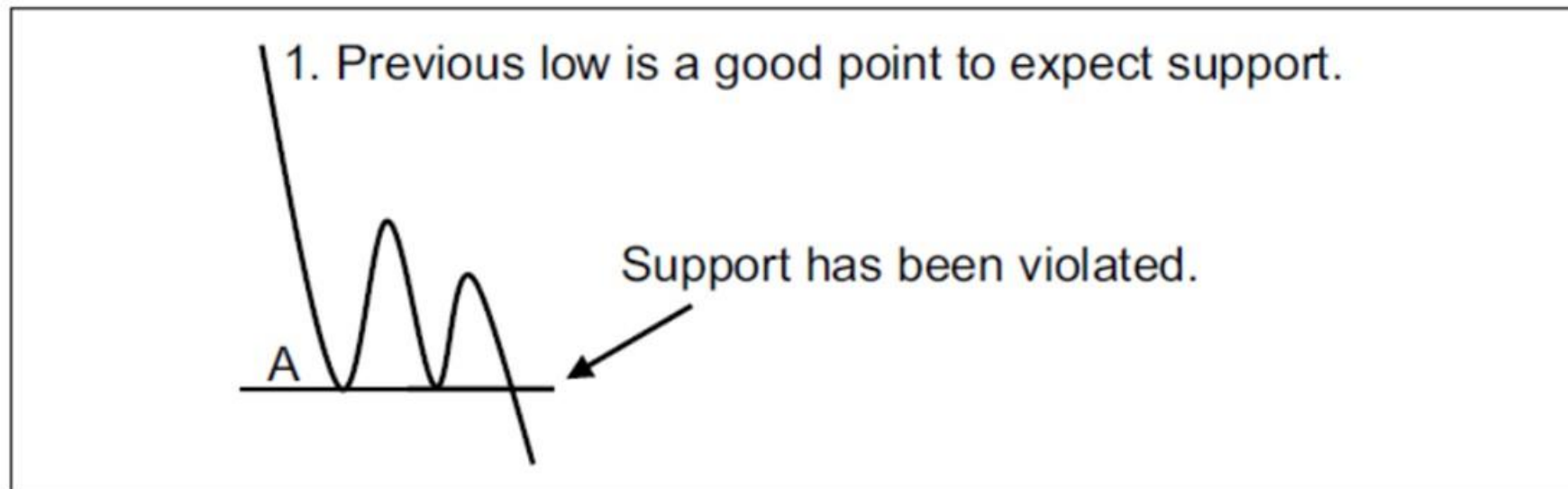
- To qualify as a reaction to the prevailing trend, the move should retrace between one-third and two-thirds of the previous move
- In the case of lines, the reaction is qualified based on the duration (instead of magnitude)



Support and Resistance Zones

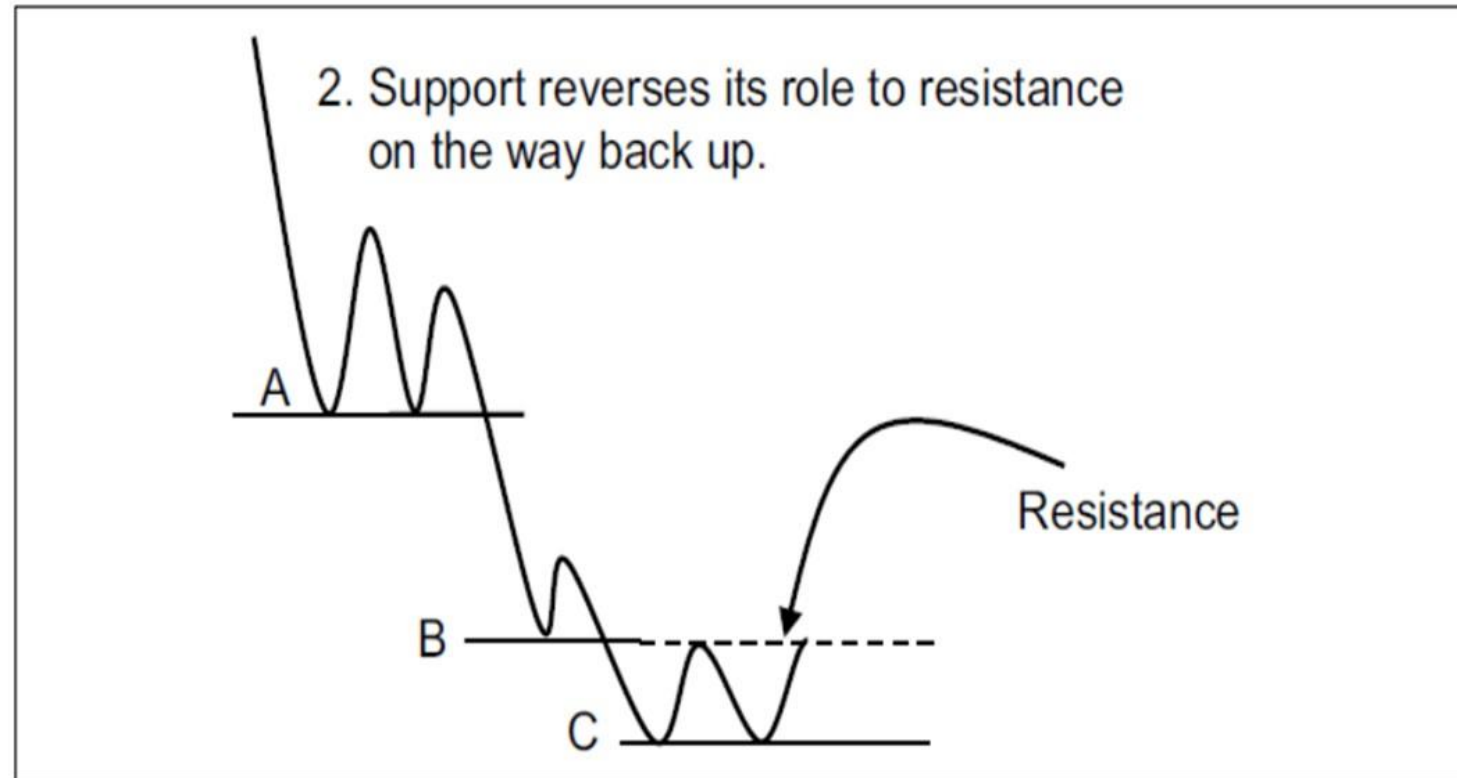
Support and Resistance Zones

Support indicates buying sufficient volumes to arrest a downtrend in prices, and resistance indicates selling sufficient volumes to stop the rise for the time



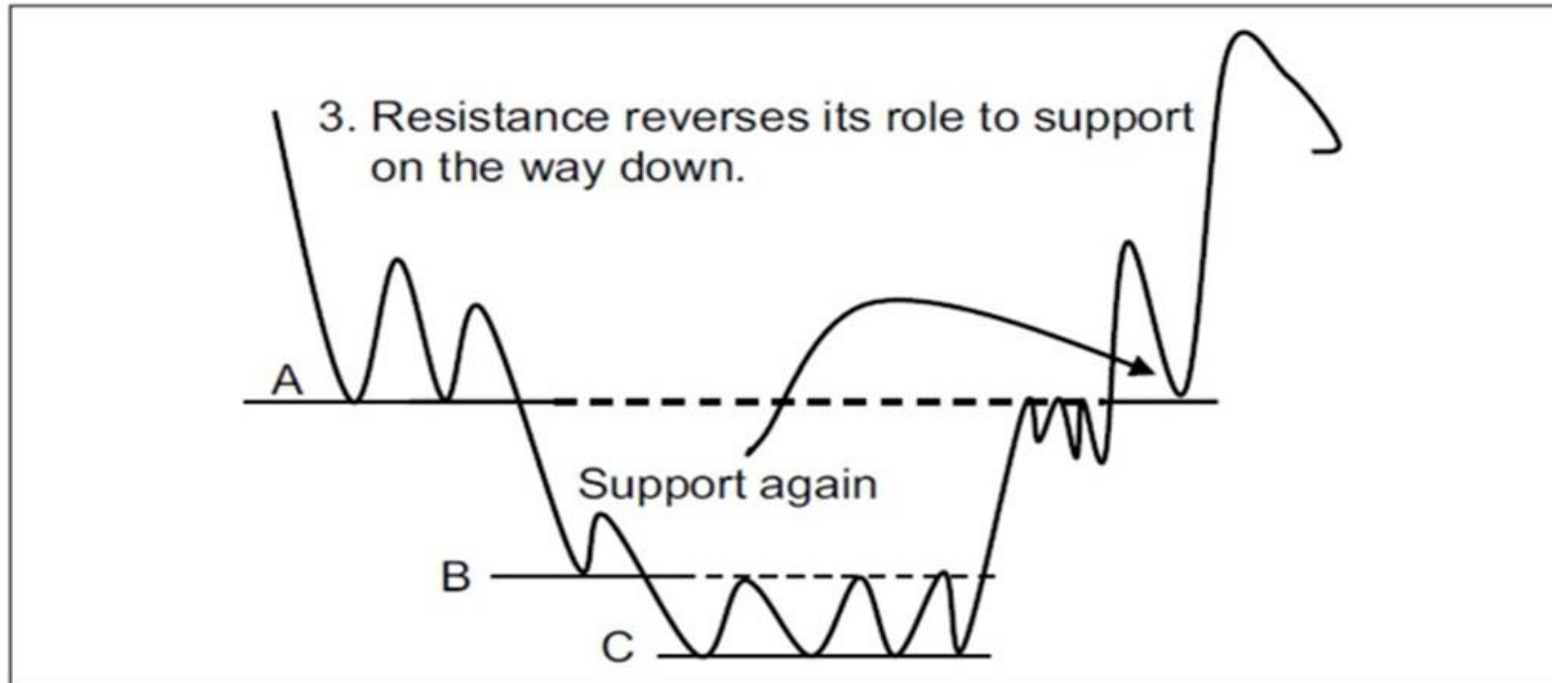
Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Support and Resistance Zones



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Support and Resistance Zones

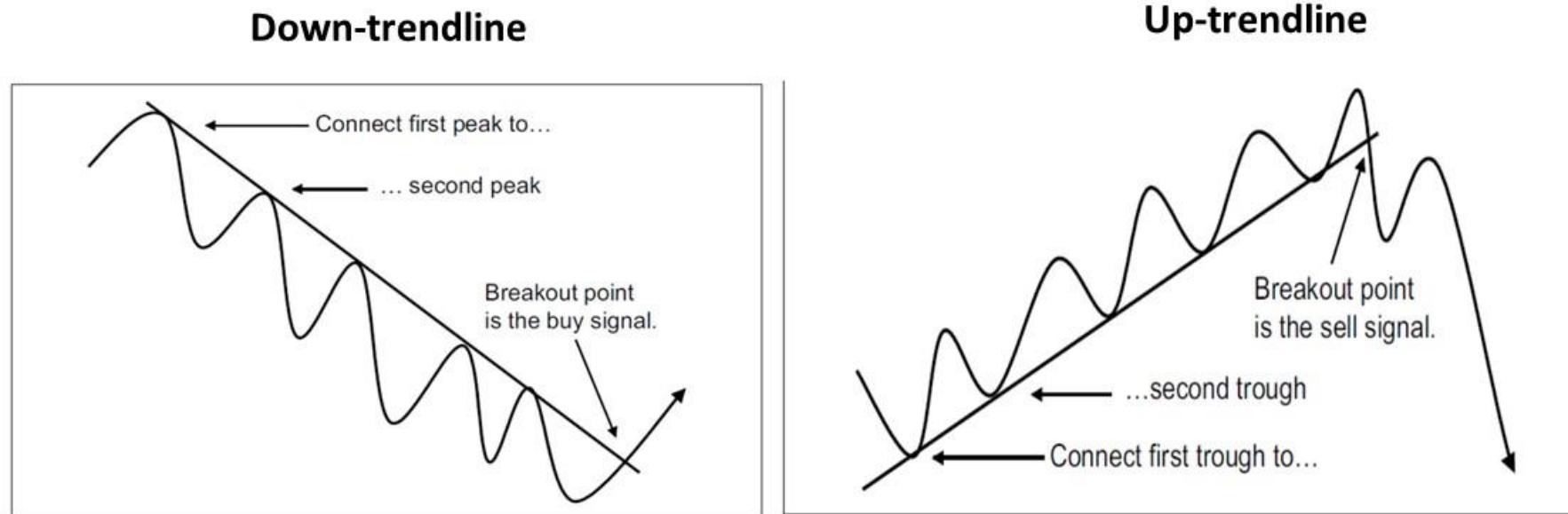


Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Trend Lines

Trend Lines

A trend line is a straight line connecting either a series of ascending bottoms in a rising market or the tops of a descending series of rally peaks



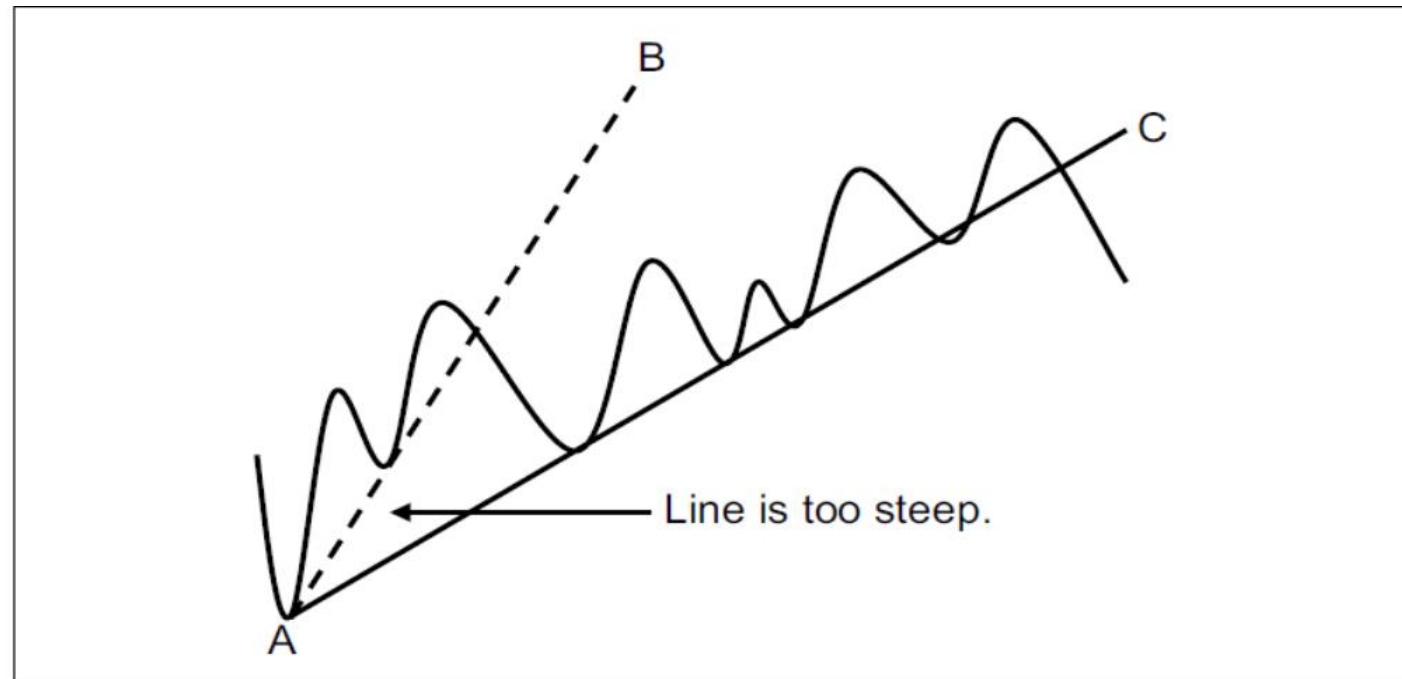
Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Trend Line Violation/Reversal of a Trend

- The volume associated with a trend line violation/break point is an important indicator
- The larger the length (duration) of a trend line, the higher the strength of the trend line violation/break point signal
- More number of times a trend line has been touched (i.e., acted as support/resistance), the greater its significance
- A very steep (up or down) trend line may be broken to result in continuation pattern rather than trend reversal

Trend Line Breaks

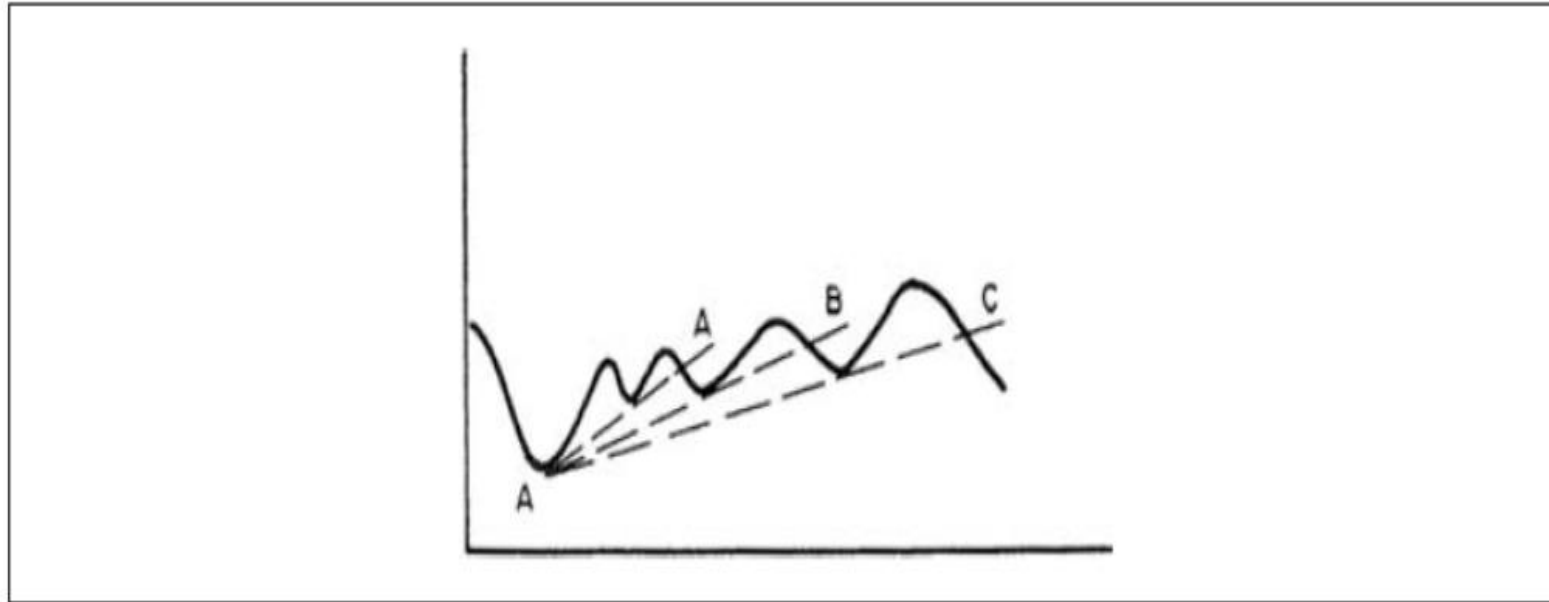
Steep angle of descent



Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Trend Line Breaks

Corrective fan principal



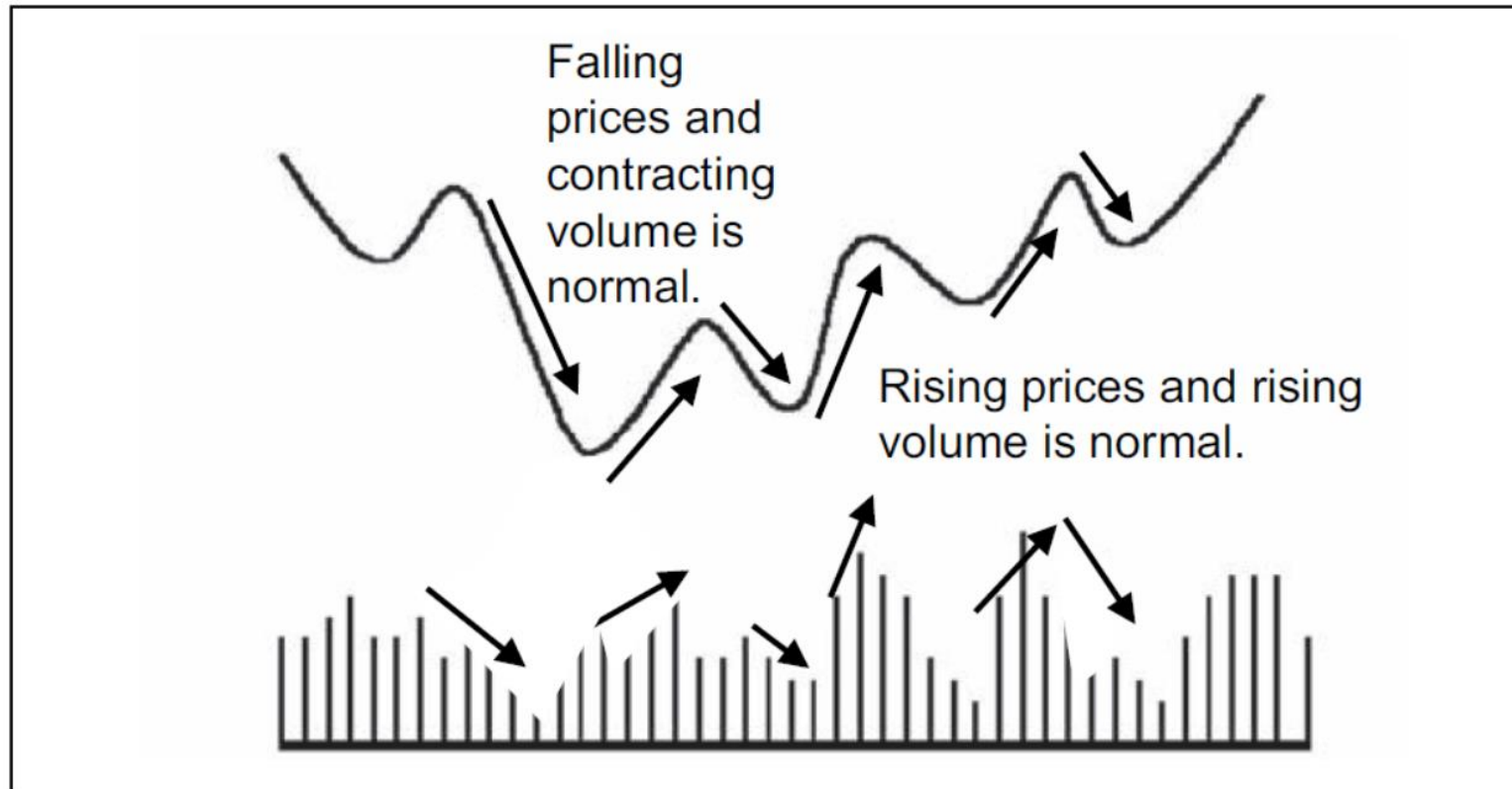
Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Basic Characteristics of Volume

Volume Characteristics

- Volume gives greater depth to the weight of the evidence
- Volume not only measures the enthusiasm of buyers and sellers but also is a variable that is independent of price
- When price and volume patterns are compared, it is important to see whether they are in agreement. If so, the probabilities favor an extension of the trend
- If price and volume disagree, this tells us that the underlying trend is not as strong as it looks on the surface

Volume Goes with the Trend

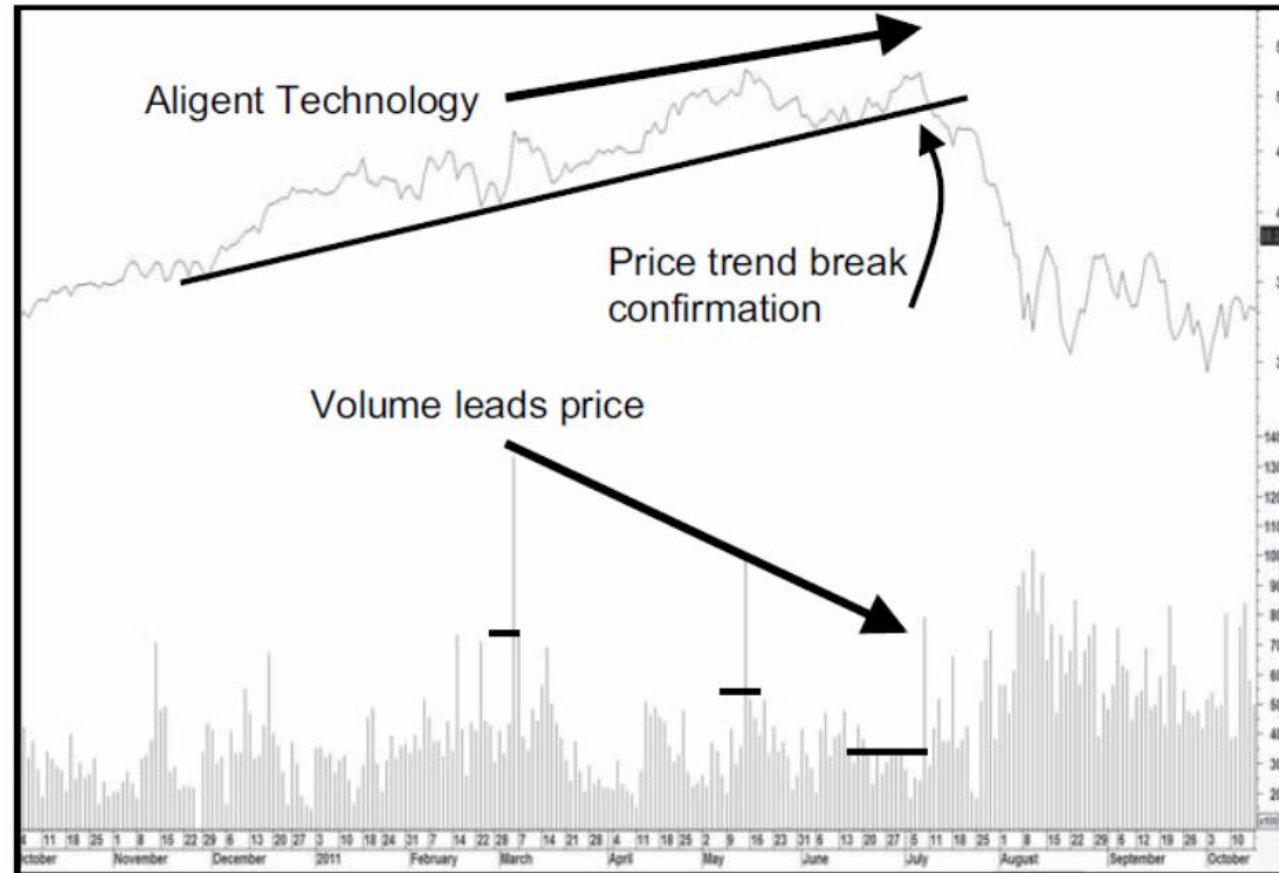


Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Volume Characteristics

- The first and most important principle is that volume typically goes with the trend. It is normal for activity to expand in a rising market and contract in a declining one
- The combination of the rising volume and rising price is normal. It indicates that things are in gear
- Volume normally leads price during a bull move. A new high in price that is not confirmed by volume should be regarded as a red flag, a warning that the prevailing trend may be about to reverse

Volume Leads Price



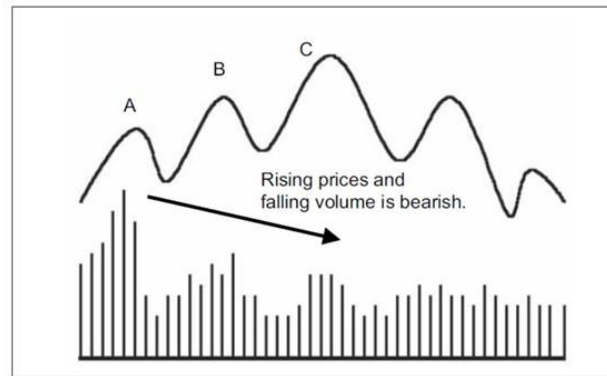
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Volume Characteristics

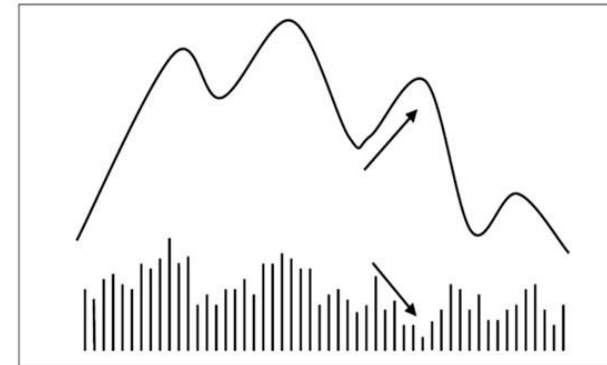
- Rising prices accompanied by a trend of falling volume is an abnormal situation. It indicates a weak and suspect rally and is a bear market characteristic
- Volume measures the relative enthusiasm of buyers and sellers. When it shrinks as prices rise, the advance occurs because of a lack of selling rather than sponsorship from buyers
- Sooner or later, the trend will reach a point where sellers become more motivated. After that, prices will start to pick up on the downside
- One clue is provided when activity increases noticeably, the price starts to decline

Volume Leads Price in an Uptrend

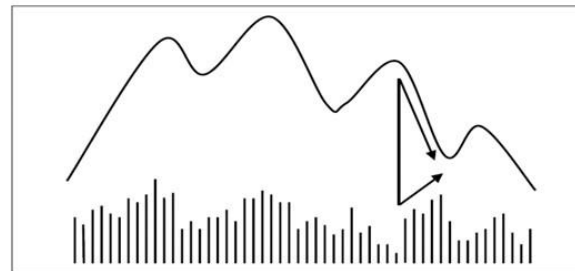
Volume leads price in an uptrend



Rising Prices and Falling Volume is Bearish

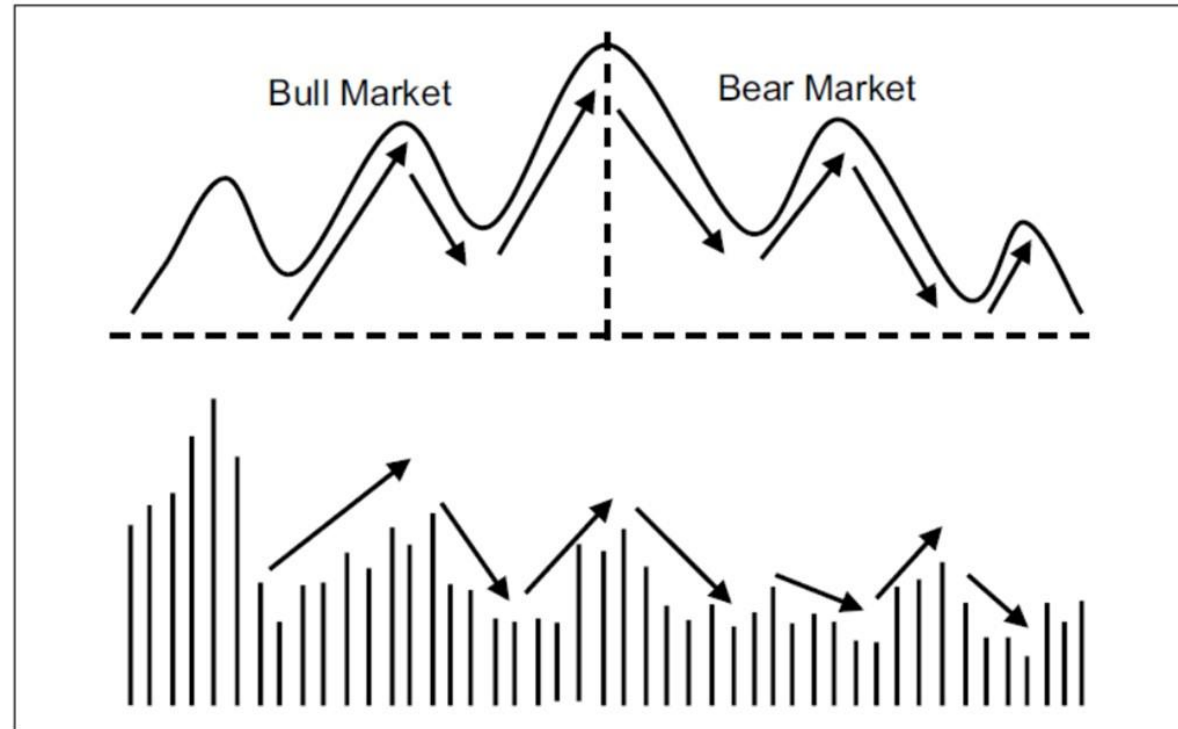


Falling Prices and Rising Volume is Bearish



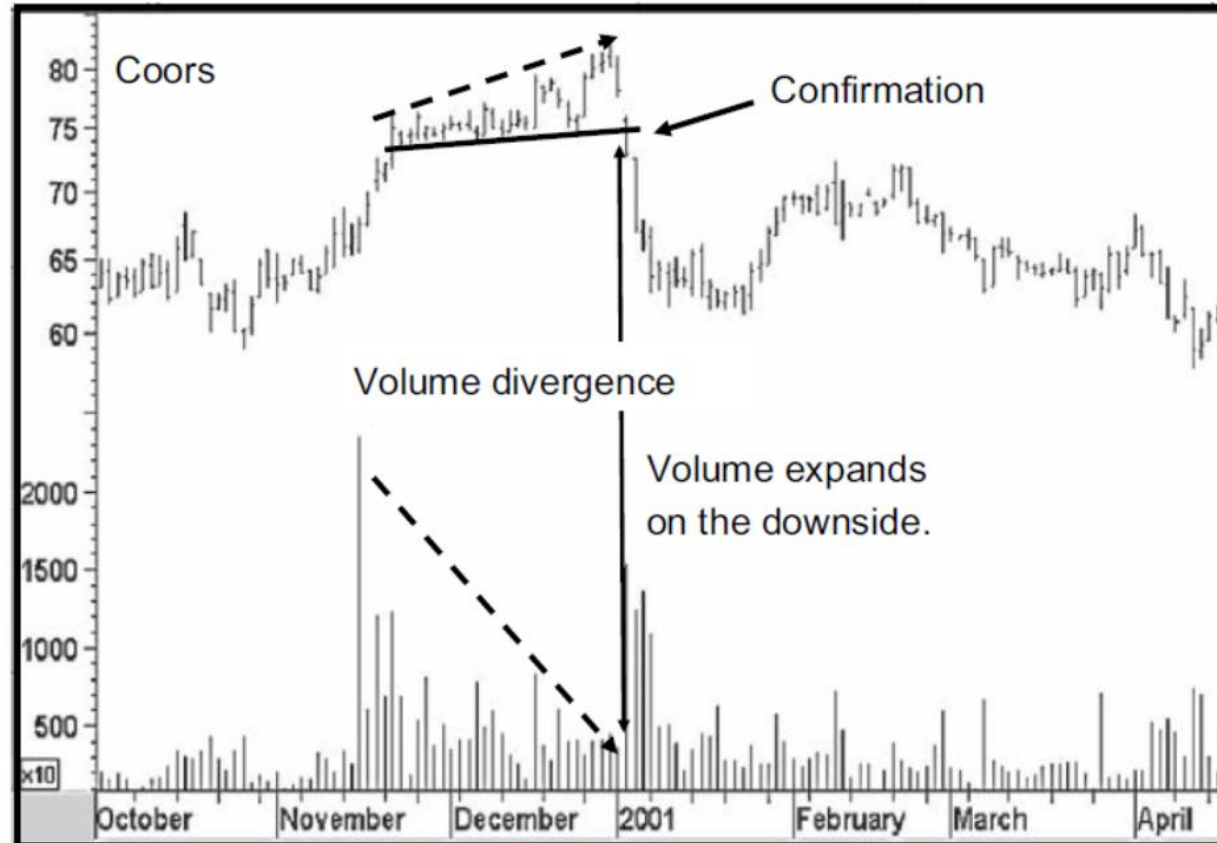
Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Volume Characteristics Change in Bull and Bear Markets



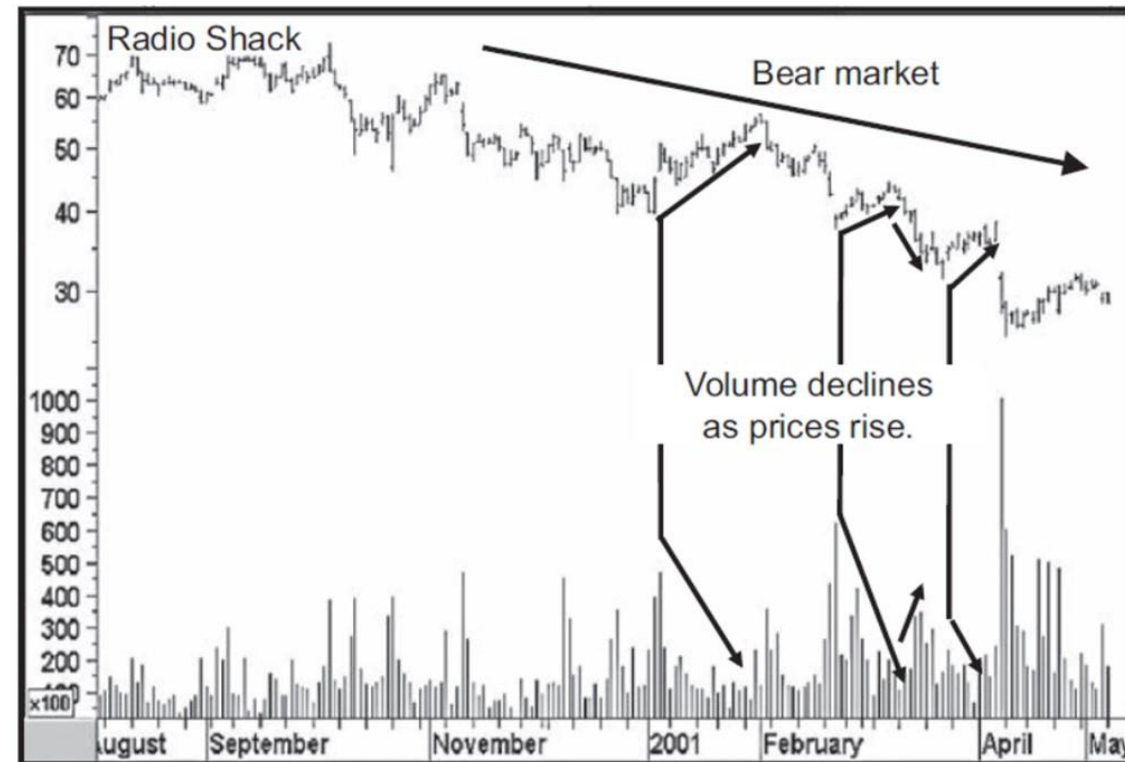
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Price Volume Divergence



Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

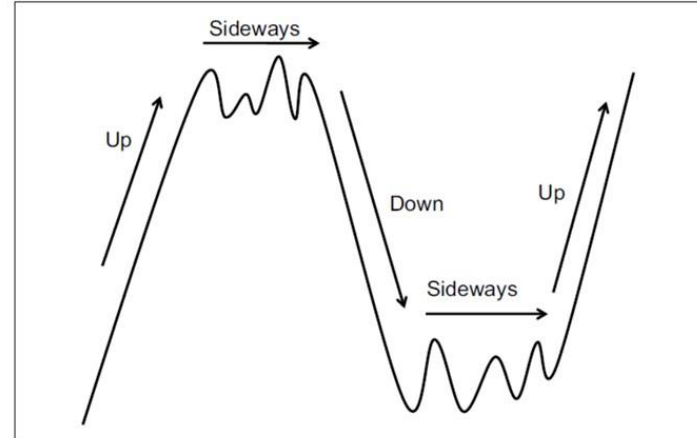
Rising Price Declining Volume



Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Classical Price Patterns

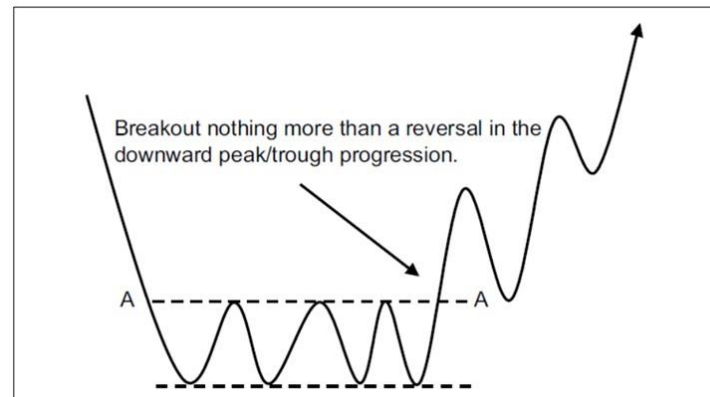
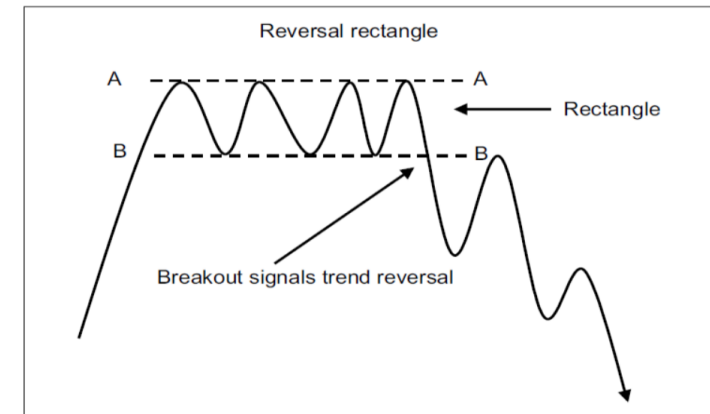
Classical Price Patterns

- A typical market cycle comprises three trends: up, sideways, and down
 - The sideways trend indicates a transition phase between two major movements
- 
- These sideways or trading ranges are often called price patterns
 - During these trading ranges, there is an even balance between buyers and sellers
 - At the end of this range (completion of the price pattern), balance is shifted in favor of buyers or sellers

Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

Classical Price Patterns

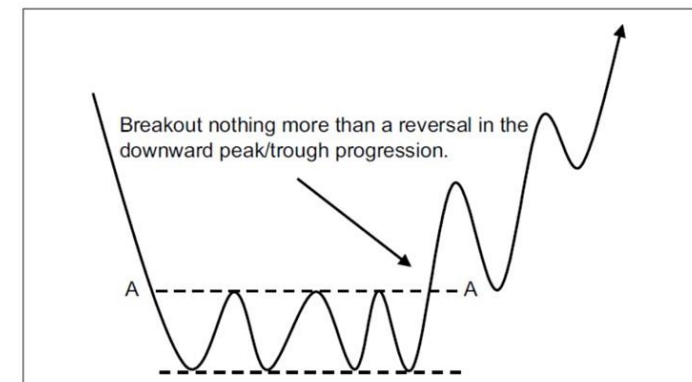
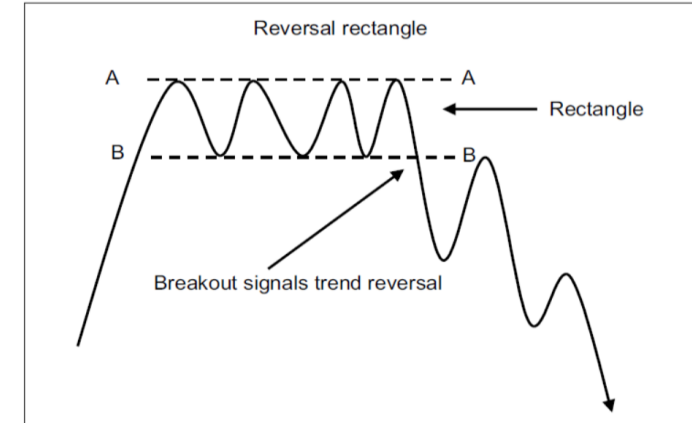
- The transition area comprises resistance and support zones
- These are the point of temporary reversals: shifting of balance between buyers and sellers
- The transitional or horizontal phase separating rising and falling price trends discussed earlier is a pattern known as a rectangle (line from DOW theory)
- Here, a reversal pattern is shown



Source: From Martin Pring, *Trading Systems Explained*, Marketplace Books, Columbia, Maryland, 2008.

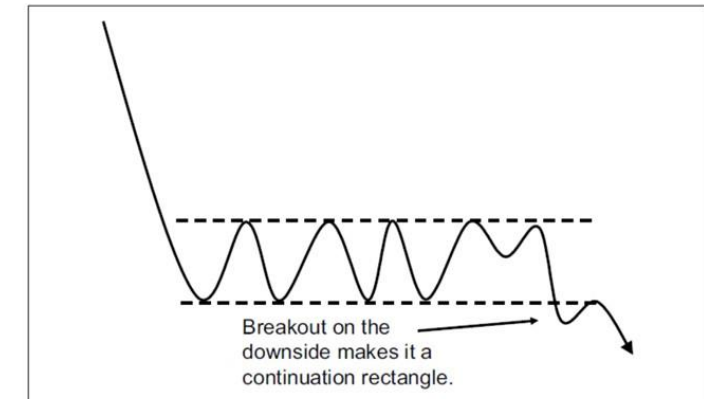
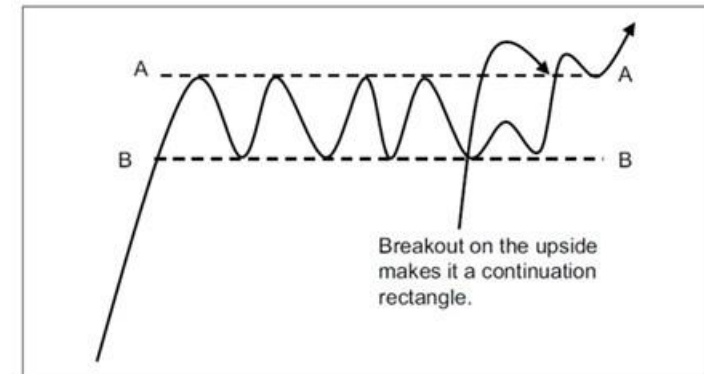
Classical Price Patterns

- Reversal patterns at market tops are known as distribution areas or patterns (where the security is “distributed” from strong, informed participants to weak, uninformed ones)
- Those at market bottoms are called accumulation patterns (where the security passes from weak, uninformed participants to strong, informed ones)



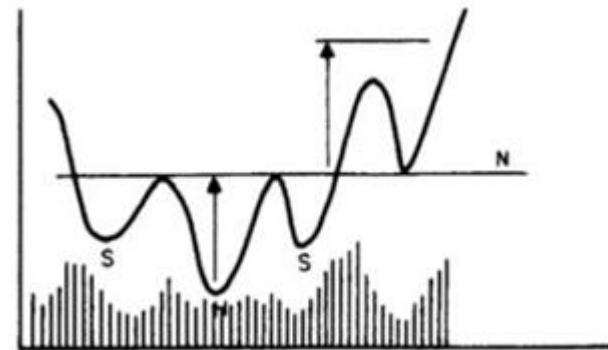
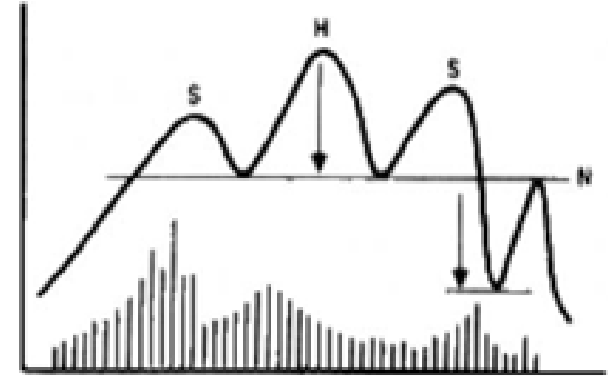
Classical Price Patterns

- The price breaks to the upside, reinforcing the series of rising peaks and troughs that precede the formation of the rectangle, thereby reaffirming the underlying trend: consolidation or continuation patterns
- In this case, the corrective phase associated with the formation of the rectangle would temporarily interrupt the trend



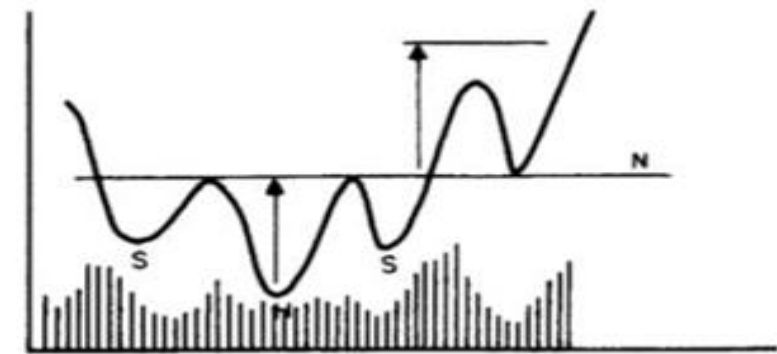
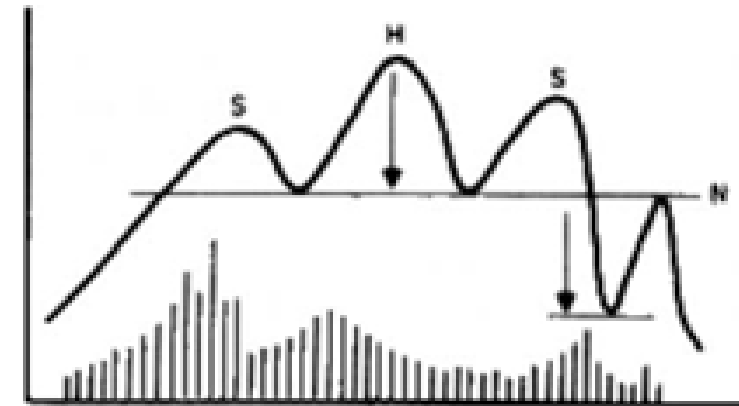
Classical Price Patterns

- Head and shoulders (H&S) are probably the most reliable of all chart patterns
- They occur at both market tops and market bottoms: accumulation and distribution
- It consists of a final rally (the head) separating two smaller, although not necessarily identical, rallies (the shoulders)
- Volume characteristics are of critical importance in assessing the validity of these patterns



Classical Price Patterns

- Right shoulder peak accompanies lower volume in the direction of previous trend and expands with breakout
- The line joining the bottoms of the two shoulders is called the neckline and represents the support area
- The violation of the neckline represents a signal that the previous series of rising/falling peaks and troughs have been broken



Summary and Concluding remarks

Summary and Concluding remarks

- Technical analysis deals with identifying temporary supply/demand mismatches
- A very important development in this regard is Dow theory by Charles Dow
- The theory has six postulations
 1. Averages discount everything
 2. Market has three types of movements: primary or major trend, secondary reaction, and minor movements.
 3. Lines indicate movement
 4. Price and volume relationships provide the background
 5. Price action determines the trend
 6. Averages must confirm

Summary and Concluding remarks

- An intermediary cycle comprises an up and down move in a primary bull or bear run
- These intermediary cycles are very important in identifying trends and reversals
- There are various price formations and patterns that are used to identify the strength of a trend and chances of its reversal
- These include support and resistance zones, trend line violations, and classical price patterns such as sideways, rectangles, breakouts, head & shoulder patterns

Summary and Concluding remarks

- Trendlines are lines connecting rising troughs and falling peaks
- A down cross of an up trend line and vice-versa price movement indicates chances of reversal
- Volume also offers important information in examining the strength of a trend and chances of reversal
- For example, volume movements that agree with price indicate the strength of the trend
- Volume movements that do not agree indicate weakness in the current trend
- Price volume relationship changes its nature in bull vs bear run

Thanks!

