Comprehensive Course on the Wave Principle

1.1 Introduction: The Broad Concept

In The Elliott Wave Principle — A Critical Appraisal, Hamilton Bolton made this opening statement:

As we have advanced through some of the most unpredictable economic climate imaginable, covering depression, major war, and postwar reconstruction and boom, I have noted how well Elliott's Wave Principle has fitted into the facts of life as they have developed, and have accordingly gained more confidence that this Principle has a good quotient of basic value.

"The Wave Principle" is Ralph Nelson Elliott's discovery that social, or crowd, behavior trends and reverses in recognizable patterns. Using stock market data as his main research tool, Elliott discovered that the ever-changing path of stock market prices reveals a structural design that in turn reflects a basic harmony found in nature. From this discovery, he developed a rational system of market analysis. Elliott isolated thirteen patterns of movement, or "waves," that recur in market price data and are repetitive in form, but are not necessarily repetitive in time or amplitude. He named, defined and illustrated the patterns. He then described how these structures link together to form larger versions of those same patterns, how they in turn link to form identical patterns of the next larger size, and so on. In a nutshell, then, the Wave Principle is a catalog of price patterns and an explanation of where these forms are likely to occur in the overall path of market development. Elliott's descriptions constitute a set of empirically derived rules and guidelines for interpreting market action. Elliott claimed predictive value for The Wave Principle, which now bears the name, "The Elliott Wave Principle."

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1.2 Short History

Although it is the best forecasting tool in existence, the Wave Principle is not primarily a forecasting tool; it is a detailed description of how markets behave. Nevertheless, that description does impart an immense amount of knowledge about the market's position within the behavioral continuum and therefore about its probable ensuing path. The primary value of the Wave Principle is that it provides a context for market analysis. This context provides both a basis for disciplined thinking and a perspective on the market's general position and outlook. At times, its accuracy in identifying, and even anticipating, changes in direction is almost unbelievable. Many areas of mass human activity follow the Wave Principle, but the stock market is where it is most popularly applied. Indeed, the stock market considered alone is far more important than it seems to casual observers. The level of aggregate stock prices is a direct and immediate measure of the popular valuation of man's total productive capability. That this valuation has form is a fact of profound implications that will ultimately revolutionize the social sciences. That, however, is a discussion for another time.

R.N. Elliott's genius consisted of a wonderfully disciplined mental process, suited to studying charts of the Dow Jones Industrial Average and its predecessors with such thoroughness and precision that he could construct a network of principles that covered all market action known to him up to the mid-1940s. At that time, with the Dow in the 100s, Elliott

predicted a great bull market for the next several decades that would exceed all expectations at a time when most investors felt it impossible that the Dow could even better its 1929 peak. As we shall see, phenomenal stock market forecasts, some of pinpoint accuracy years in advance, have accompanied the history of the application of the Elliott Wave approach.

Elliott had theories regarding the origin and meaning of the patterns he discovered, which we will present and expand upon in Lessons 16-19. Until then, suffice it to say that the patterns described in Lessons 1-15 have stood the test of time.

Often one will hear several different interpretations of the market's Elliott Wave status, especially when cursory, off-the-cuff studies of the averages are made by latter day experts.

However, most uncertainties can be avoided by keeping charts on both arithmetic and semilogarithmic scale and by taking care to follow the rules and guidelines as laid down in this course. Welcome to the world of Elliott.

1.3 Basic Tenets

Under the Wave Principle, every market decision is both produced by meaningful information and produces meaningful information. Each transaction, while at once an effect, enters the fabric of the market and, by communicating transactional data to investors, joins the chain of causes of others' behavior. This feedback loop is governed by man's social nature, and since he has such a nature, the process generates forms. As the forms are repetitive, they have predictive value.

Sometimes the market appears to reflect outside conditions and events, but at other times it is entirely detached from what most people assume are causal conditions. The reason is that the market has a law of its own. It is not propelled by the linear causality to which one becomes accustomed in the everyday experiences of life. Nor is the market the cyclically rhythmic machine that some declare it to be. Nevertheless, its movement reflects a structured formal progression.

That progression unfolds in waves. Waves are patterns of directional movement. More specifically, a wave is any one of the patterns that naturally occur under the Wave Principle, as described in Lessons 1-9 of this course.

The Five Wave Pattern

In markets, progress ultimately takes the form of five waves of a specific structure. Three of these waves, which are labeled 1, 3 and 5, actually effect the directional movement. They are separated by two countertrend interruptions, which are labeled 2 and 4, as shown in Figure 1-1. The two interruptions are apparently a requisite for overall directional movement to occur.

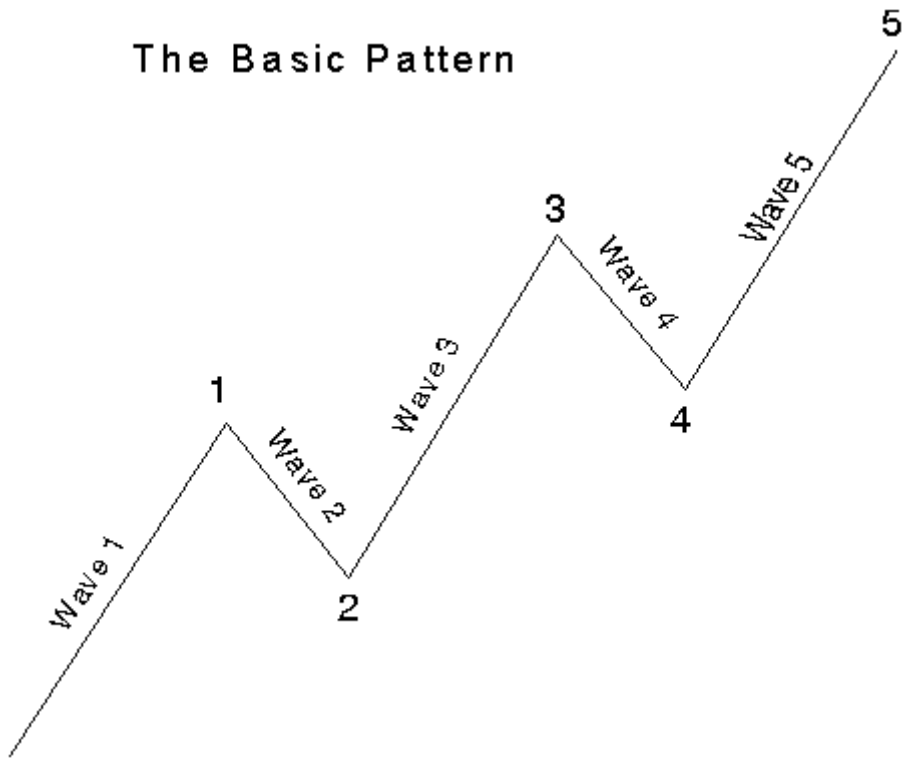

Figure 1-1

R.N. Elliott did not specifically state that there is only one overriding form, the "five wave" pattern, but that is undeniably the case. At any time, the market may be identified as being somewhere in the basic five wave pattern at the largest degree of trend. Because the five wave pattern is the overriding form of market progress, all other patterns are subsumed by it.

1.4 Wave Mode

There are two modes of wave development: motive and corrective. Motive waves have a five wave structure, while corrective waves have a three wave structure or a variation thereof. Motive mode is employed by both the five wave pattern of Figure 1-1 and its same-directional components, i.e., waves 1, 3 and 5. Their structures are called "motive" because they powerfully impel the market. Corrective mode is employed by all

countertrend interruptions, which include waves 2 and 4 in Figure 1-1. Their structures are called "corrective" because they can accomplish only a partial retracement, or "correction," of the progress achieved by any preceding motive wave. Thus, the two modes are fundamentally different, both in their roles and in their construction, as will be detailed throughout this course.

In his 1938 book, *The Wave Principle*, and again in a series of articles published in 1939 by *Financial World* magazine, R.N. Elliott pointed out that the stock market unfolds according to a basic rhythm or pattern of five waves up and three waves down to form a complete cycle of eight waves. The pattern of five waves up followed by three waves down is depicted in Figure 1-2.

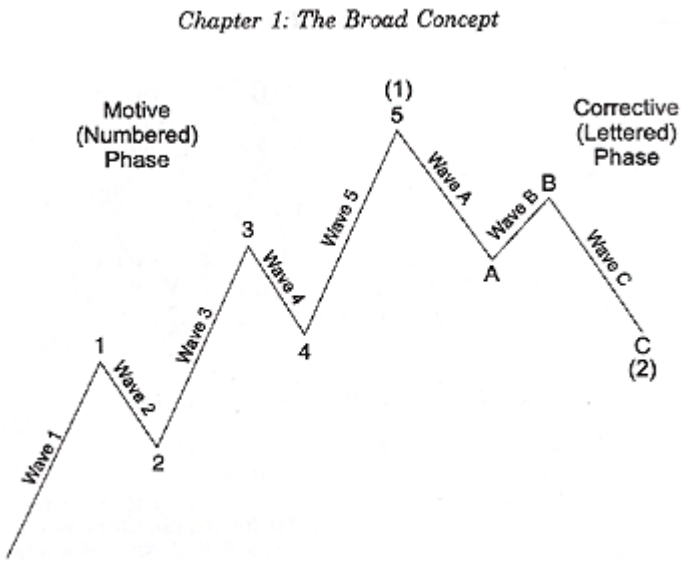

Figure 1-2

One complete cycle consisting of eight waves, then, is made up of two distinct phases, the motive phase (also called a "five"), whose subwaves are denoted by numbers, and the corrective phase (also called a "three"), whose subwaves are denoted by letters. The sequence a, b, c corrects the sequence 1, 2, 3, 4, 5 in Figure 1-2.

At the terminus of the eight-wave cycle shown in Figure 1-2 begins a second similar cycle of five upward waves followed by three downward waves. A third advance then develops, also consisting of five waves up. This third advance completes a five wave movement of one degree larger than the waves of which it is composed. The result is as shown in Figure 1-3 up to the peak labeled (5).

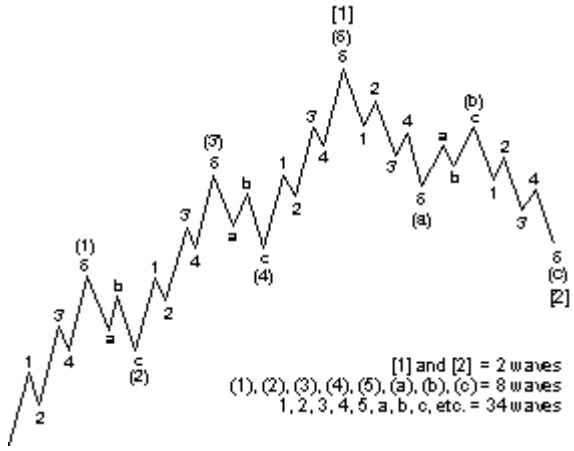

Figure 1-3

At the peak of wave (5) begins a down movement of correspondingly larger degree, composed once again of three waves. These three larger waves down "correct" the entire movement of five larger waves up. The result is another complete, yet larger, cycle, as shown in Figure 1-3. As Figure 1-3 illustrates, then, *each same-direction component of a motive wave, and each full-cycle component* (i.e., waves 1 + 2, or waves 3 + 4) *of a cycle, is a smaller version of itself.*

It is crucial to understand an essential point: Figure 1-3 not only illustrates a *larger* version of Figure 1-2, it also illustrates *Figure 1-2 itself*, in greater detail. In Figure 1-2, each subwave 1, 3 and 5 is a motive wave that will subdivide into a "five," and

each subwave 2 and 4 is a corrective wave that will subdivide into an a, b, c. Waves (1) and (2) in Figure 1-3, if examined under a "microscope," would take the same form as waves [1]* and [2]. All these figures illustrate the phenomenon of constant form within ever-changing degree.

1.5 Essential Design

The market's compound construction is such that two waves of a particular degree subdivide into eight waves of the *next* lower degree, and those eight waves subdivide in exactly the same manner into thirty-four waves of the next lower degree. The Wave Principle, then, reflects the fact that waves of any degree in any series always subdivide and re-subdivide into waves of lesser degree and simultaneously are components of waves of higher degree. Thus, we can use Figure 1-3 to illustrate two waves, eight waves or thirty-four waves, depending upon the degree to which we are referring.

Now observe that within the corrective pattern illustrated as wave [2] in Figure 1-3, waves (a) and (c), which point downward, are composed of five waves: 1, 2, 3, 4 and 5. Similarly, wave (b), which points upward, is

composed of three waves: a, b and c. This construction discloses a crucial point: that motive waves do not always point upward, and corrective waves do not always point downward. The mode of a wave is determined not by its absolute direction but primarily by its *relative* direction. Aside from four specific exceptions, which will be discussed later in this course, waves divide in *motive* mode (five waves) when trending in the same direction as the wave of one larger degree of which it is a part, and in *corrective* mode (three waves or a variation) when trending in the opposite direction. Waves (a) and (c) are motive, trending in the *same direction* as wave [2]. Wave (b) is corrective because it corrects wave (a) and is *countertrend* to wave [2]. In summary, the essential underlying tendency of the Wave Principle is that action in the same direction as the one larger trend develops in five waves, while reaction against the one larger trend develops in three waves, *at all degrees of trend*.

*Note: For this course, all Primary degree numbers and letters normally denoted by circles are shown with brackets.

Essential Concepts

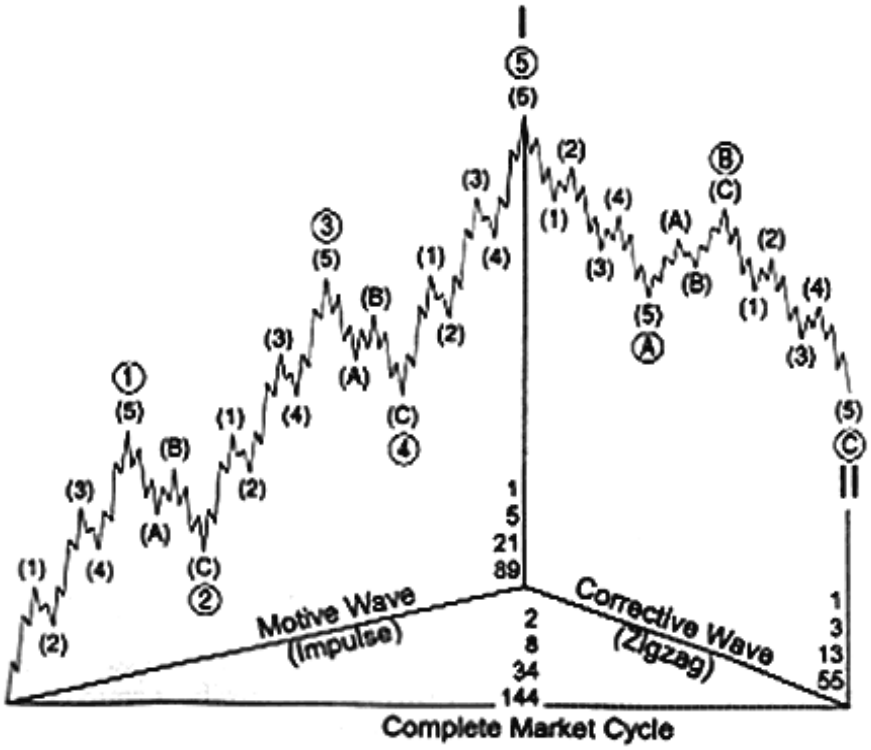

Figure 1-4

The phenomena of *form, degree* and *relative direction* are carried one step further in Figure 1-4. This illustration reflects the general principle that in any market cycle, waves will subdivide as shown in the following table

1.6 Wave Numbers

Number of Waves at Each Degree
Impulse + Correction = Cycle

Largest waves 1+1=2

Largest subdivisions 5+3=8

Next subdivisions 21+13=34

Next subdivisions 89+55=144

As with Figures 1-2 and 1-3 in Lesson 2, neither does Figure 1-4 imply finality. As before, the termination of yet another eight wave movement (five up and three down) completes a cycle that automatically becomes two subdivisions of the wave of *next* higher degree. As long as progress continues, the process of building to greater degrees continues. The reverse process of subdividing into lesser degrees apparently continues indefinitely as well. As far as we can determine, then, all waves both *have* and *are* component waves.

Elliott himself never speculated on why the market's essential form was five waves to progress and three waves to regress. He simply noted that that was what was happening. Does the essential form have to be five waves and three waves? Think about it and you will realize that this is *the* minimum requirement for, and therefore the most efficient method of, achieving both *fluctuation* and *progress* in linear movement. *One* wave does not allow *fluctuation*. The fewest subdivisions to create fluctuation is three waves. Three waves *in both directions* does not allow *progress*. To progress in one direction despite periods of regress, movements in the main trend must be at least five waves, simply to cover more ground than the three waves and still contain fluctuation. While there could be more waves than that, the most efficient form of punctuated progress is 5-3, and nature typically follows the most efficient path.

Variations on the Basic Theme

The Wave Principle would be simple to apply if the basic theme described above were the complete description of market behavior. However, the real world, fortunately or unfortunately, is not so simple. From here through Lesson 15, we will fill out the description of how the market behaves in reality. That's what Elliott set out to describe, and he succeeded in doing so.

WAVE DEGREE

All waves may be categorized by relative size, or degree. Elliott discerned nine degrees of waves, from the smallest wiggle on an hourly chart to the largest wave he could assume existed from the data then available. He chose the names listed below to label these degrees, from largest to smallest:

Grand Supercycle
Supercycle
Cycle
Primary
Intermediate
Minor
Minute
Minuette
Subminuette

It is important to understand that these labels refer to specifically identifiable degrees of waves. For instance, whenwe refer to the U.S. stock market's rise from 1932, we speak of it as a Supercycle with subdivisions as follows:

1932-1937 the first wave of Cycle degree

1937-1942 the second wave of Cycle degree

1942-1966 the third wave of Cycle degree

1966-1974 the fourth wave of Cycle degree

1974-19?? the fifth wave of Cycle degree

Cycle waves subdivide into Primary waves that subdivide into Intermediate waves that in turn subdivide into Minor and sub-Minor waves. By using this nomenclature, the analyst can identify precisely the position of a wave in the overall progression of the market, much as longitude and latitude are used to identify a geographical location. To say, "the Dow Jones Industrial Average is in Minute wave v of Minor wave 1 of Intermediate wave (3) of Primary wave [5] of Cycle wave I of Supercycle wave (V) of the current Grand Supercycle" is to identify a specific point along the progression of market history.

1.7 Degrees

When numbering and lettering waves, the scheme shown below is recommended to differentiate the degrees of waves in the stock market's progression:

Wave Degree	5s With the Trend					3s Against the Trend		
Grand Supercycle	Ⓘ	Ⓘⓘ	Ⓘⓘⓘ	Ⓘⓥ	Ⓥ	ⓐ	ⓑ	ⓒ
Supercycle	(I)	(II)	(III)	(IV)	(V)	(a)	(b)	(c)
Cycle	I	II	III	IV	V	a	b	c
Primary	①	②	③	④	⑤	Ⓐ	Ⓑ	Ⓒ
Intermediate	(1)	(2)	(3)	(4)	(5)	(A)	(B)	(C)
Minor	1	2	3	4	5	A	B	C
Minute	ⓘ	ⓘⓘ	ⓘⓘⓘ	ⓘⓥ	ⓥ	ⓐ	ⓑ	ⓒ
Minuette	(i)	(ii)	(iii)	(iv)	(v)	(a)	(b)	(c)
Subminuette	i	ii	iii	iv	v	a	b	c

The most desirable form for a scientist is usually something like 1_1, 1_2, 1_3, 1_4, 1_5, etc., with subscripts denoting degree, but it's a nightmare to read such notations on a chart. The above table provides for rapid visual orientation. Charts may also use color as an effective device for differentiating degree.

In Elliott's suggested terminology, the term "Cycle" is used as a name denoting a specific degree of wave and is not intended to imply a cycle in the typical sense. The same is true of the term "Primary," which in the past has been used loosely by Dow Theorists in phrases such as "primary swing" or "primary bull market." The specific terminology is not critical to the identification of relative degrees, and the authors have no argument with amending the terms, although out of habit we have become comfortable with Elliott's nomenclature.

The precise identification of wave degree in "current time" application is occasionally one of the difficult aspects of the Wave Principle. Particularly at the start of a new wave, it can be difficult to decide what degree the initial smaller subdivisions are. The main reason for the difficulty is that wave degree is not based upon specific price or time lengths. Waves are dependent upon *form*, which is a function of both price *and* time. The degree of a form is determined by its size and position *relative to component, adjacent and encompassing waves.*

This relativity is one of the aspects of the Wave Principle that make real time interpretation an intellectual challenge. Fortunately, the precise degree is usually irrelevant to successful forecasting since it is *relative* degree that matters most. Another challenging aspect of the Wave Principle is the variability of forms, as described through Lesson 9 of this

1.8 Wave Function

Every wave serves one of two functions: *action* or *reaction*. Specifically, a wave may either advance the cause of the wave of one larger degree or interrupt it. The function of a wave is determined by its *relative direction*. An *actionary* or *trend* wave is any wave that trends in the *same* direction as the wave of one larger degree of which it is a part. A *reactionary* or *countertrend* wave is any wave that trends in the direction *opposite* to that of the wave of one larger degree of which it is part. Actionary waves are labeled with *odd* numbers and letters. Reactionary waves are labeled with even numbers and letters.

All reactionary waves develop in corrective mode. If all actionary waves developed in motive mode, then there would be no need for different terms. Indeed, most actionary waves do subdivide into five waves. However, as the following sections reveal, a few actionary waves develop in corrective mode, i.e., they subdivide into *three* waves or a variation thereof. A detailed knowledge of pattern construction is required before one can draw the distinction between *actionary* function and *motive* mode, which in the underlying model introduced so far are indistinct. A thorough understanding of the forms detailed in the next five lessons will clarify why we have introduced these terms to the Elliott Wave lexicon.

2.1 Motive Waves

Motive waves subdivide into *five* waves with certain characteristics and always in the same direction as the trend of one larger degree. They are straightforwar relatively easy to recognize and interpret.

Within motive waves, wave 2 never retraces more than 100% of wave 1, and w never retraces more than 100% of wave 3. Wave 3, moreover, always travels beyond the end of wave 1. The goal of a motive wave is to make progress, and rules of formation assure that it will.

Elliott further discovered that in *price* terms, wave 3 is often the longest and ne the shortest among the three actionary waves (1, 3 and 5) of a motive wave. A long as wave 3 undergoes a greater percentage movement than either wave 1 this rule is satisfied. It almost always holds on an arithmetic basis as well. Ther two types of motive waves: *impulses* and *diagonal triangles*.

Impulse

The most common motive wave is an *impulse*. In an impulse, wave 4 does not

the territory of (i.e., "overlap") wave 1. This rule holds for all non-leveraged "ca markets. Futures markets, with their extreme leverage, can induce short term p extremes that would not occur in cash markets. Even so, overlapping is usually confined to daily and intraday price fluctuations and even then is extremely rare addition, the actionary subwaves (1, 3 and 5) of an impulse are themselves mo and subwave 3 is specifically an impulse. Figures 1-2, 1-3 and 1-4 in Lesson 1 a depict impulses in the 1, 3, 5, A and C wave positions.

As detailed in the preceding three paragraphs, there are only a few simple rules interpreting impulses properly. A *rule* is so called because it governs all waves t which it applies. Typical, *yet not inevitable*, characteristics of waves are called *guidelines*. Guidelines of impulse formation, including extension, truncation, alternation, equality, channeling, personality and ratio relationships are discuss below and through Lesson 24 of this course. A rule should never be disregarded many years of practice with countless patterns, the authors have found but one instance above Subminuette degree when all other rules and guidelines combin suggest that a rule was broken. Analysts who routinely break any of the rules detailed in this section are practicing some form of analysis other than that guid by the Wave Principle. These rules have great practical utility in correct countin which we will explore further in discussing extensions.

2.2 Extension

Most impulses contain what Elliott called an extension. Extensions are elongated impulses with exaggerated subdivisions. The vast majority of impulse waves do contain an extension in one and only one of their three actionary subwaves. At times, the subdivisions of an extended wave are nearly the same amplitude and duration as the other four waves of the larger impulse, giving a total count of n waves of similar size rather than the normal count of "five" for the sequence. In nine-wave sequence, it is occasionally difficult to say which wave extended. However, it is usually irrelevant anyway, since under the Elliott system, a count nine and a count of five have the same technical significance. The diagrams in F 1-5, illustrating extensions, will clarify this point.

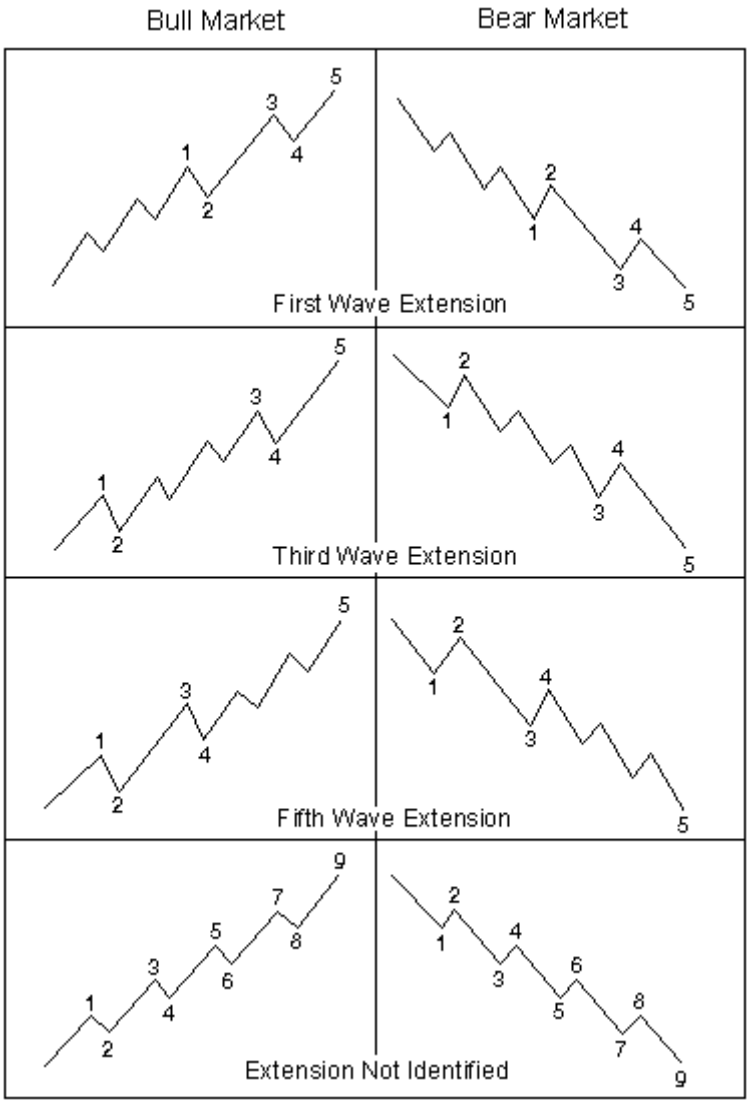

Figure 5

The fact that extensions typically occur in only one actionary subwave provides useful guide to the expected lengths of upcoming waves. For instance, if the firs third waves are of about equal length, the fifth wave will likely be a protracted s (In waves below Primary degree, a developing fifth wave extension will be confi by new high volume, as described in Lesson 13 under "Volume.") Conversely, if three extends, the fifth should be simply constructed and resemble wave one.

In the stock market, *the most commonly extended wave is wave 3.* This fact is particular importance to real time wave interpretation when considered in conjunction with two of the rules of impulse waves: that wave 3 is never the sh actionary wave, and that wave 4 may not overlap wave 1. To clarify, let us assu two situations involving an improper middle wave, as illustrated in Figures 1-6 a 1-7.

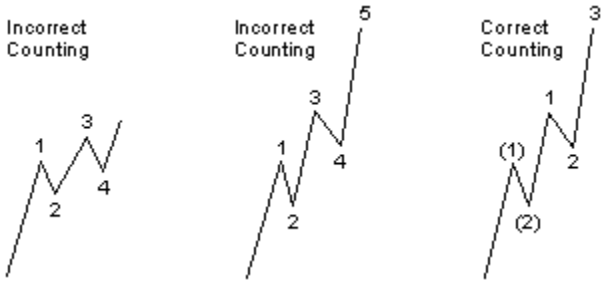

Figure 1-6 Figure 1-7 Figure 1-8

In Figure 1-6, wave 4 overlaps the top of wave 1. In Figure 1-7, wave 3 is shor than wave 1 and shorter than wave 5. According to the rules, neither is an acceptable labeling. Once the apparent wave 3 is proved unacceptable, it must relabeled in some way that *is* acceptable. In fact, it is almost always to be label shown in Figure 1-8, implying an extended wave (3) in the making. Do not hesi to get into the habit of labeling the early stages of a third wave extension. The exercise will prove highly rewarding, as you will understand from the discussion under Wave Personality in Lesson 14. Figure 1-8 is perhaps the single most use guide to real time impulse wave counting in this course.Extensions may also oc within extensions. In the stock market, the third wave of an extended third wav typically an extension as well, producing a profile such as shown in Figure 1-9. Figure 1-10 illustrates a fifth wave extension of a fifth wave extension. Extende fifths are fairly uncommon except in bull markets in commodities covered in Les 28.

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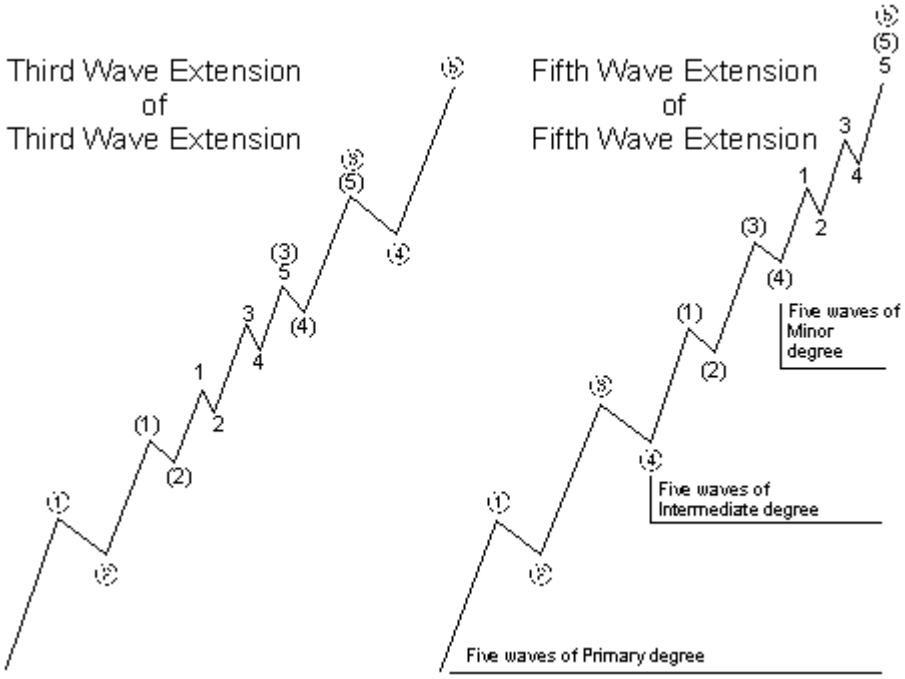


Figure 1-9 Figure 1-10

2.3 Truncation

Elliott used the word "failure" to describe a situation in which the fifth wave doe
move beyond the end of the third. We prefer the less connotative term, "trunca
or "truncated fifth." A truncation can usually be verified by noting that the presu
fifth wave contains the necessary five subwaves, as illustrated in Figures 1-11 a
12. Truncation often occurs following an extensively strong third wave.

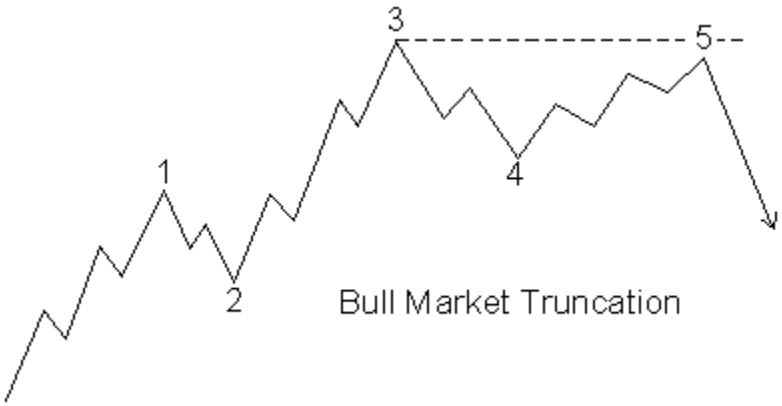


Figure 1-11

Figure 1-12

The U.S. stock market provides two examples of major degree truncated fifths s
1932. The first occurred in October 1962 at the time of the Cuban crisis (see Fig
1-13). It followed the crash that occurred as wave 3. The second occurred at ye
end in 1976 (see Figure 1-14). It followed the soaring and broad wave (3) that
place from October 1975 to March 1976.

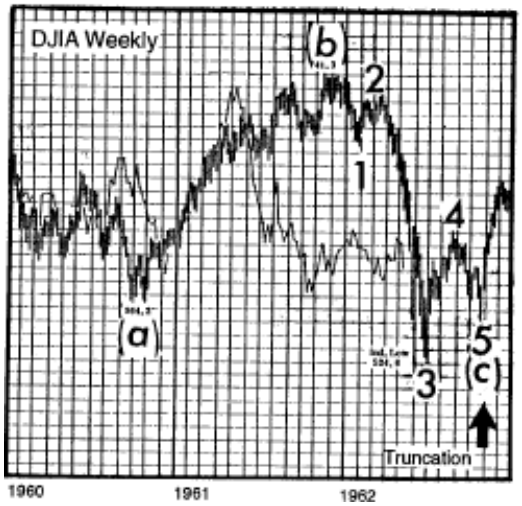


Figure 1-13

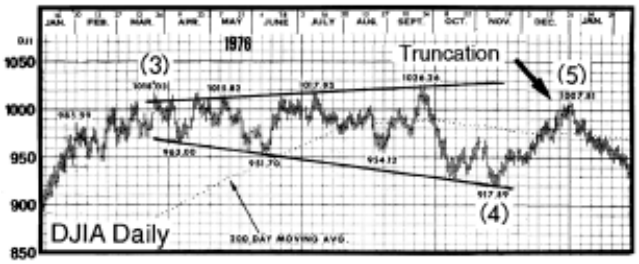


Figure 1-14

3.1 Diagonal Triangles

A diagonal triangle is a motive pattern yet not an impulse, as it has one or two corrective characteristics. Diagonal triangles substitute for impulses at specific locations in the wave structure. As with impulses, no reactionary subwave fully retraces the preceding actionary subwave, and the third subwave is never the shortest. However, diagonal triangles are the only five-wave structures in the direction of the main trend within which wave four almost always moves into th price territory of (i.e., overlaps) wave one. On rare occasions, a diagonal triang may end in a truncation, although in our experience such truncations occur only the slimmest of margins.

Ending Diagonal

An ending diagonal is a special type of wave that occurs primarily in the fifth wa position at times when the preceding move has gone "too far too fast," as Elliot it. A very small percentage of ending diagonals appear in the C wave position o C formations. In double or triple threes (to be covered in Lesson 9), they appea only as the *final* "C" wave. In all cases, they are found at the *termination points larger patterns*, indicating exhaustion of the larger movement.

Ending diagonals take a wedge shape within two converging lines, with each subwave, including waves 1, 3 and 5, subdividing into a "three," which is otherv corrective wave phenomenon. The ending diagonal is illustrated in Figures 1-15 1-16 and shown in its typical position in larger impulse waves.

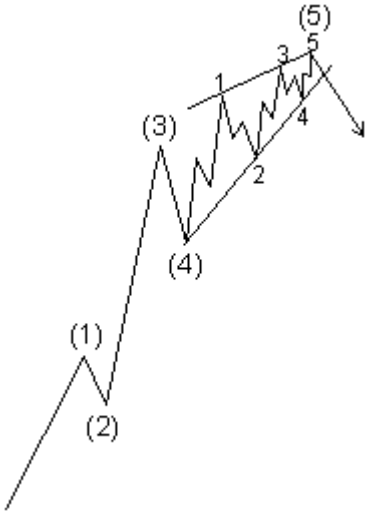


Figure 1-15

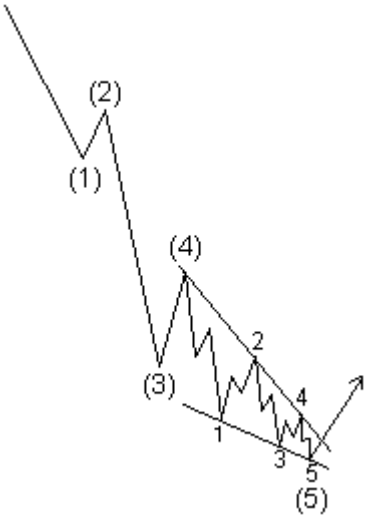


Figure 1-16

We have found one case in which the pattern's boundary lines *diverged*, creatin expanding wedge rather than a contracting one. However, it is unsatisfying analytically in that its third wave was the shortest actionary wave, the entire formation was larger than normal, and another interpretation was *possible*, if n attractive. For these reasons, we do not include it as a valid variation.

3.2 Diagonals

Ending diagonals have occurred recently in Minor degree as in early 1978, in Mi degree as in February-March 1976, and in Subminuette degree as in June 1976 Figures 1-17 and 1-18 show two of these periods, illustrating one upward and c downward "real-life" formation. Figure 1-19 shows our real-life possible expand diagonal triangle. Notice that in each case, an important change of direction followed.

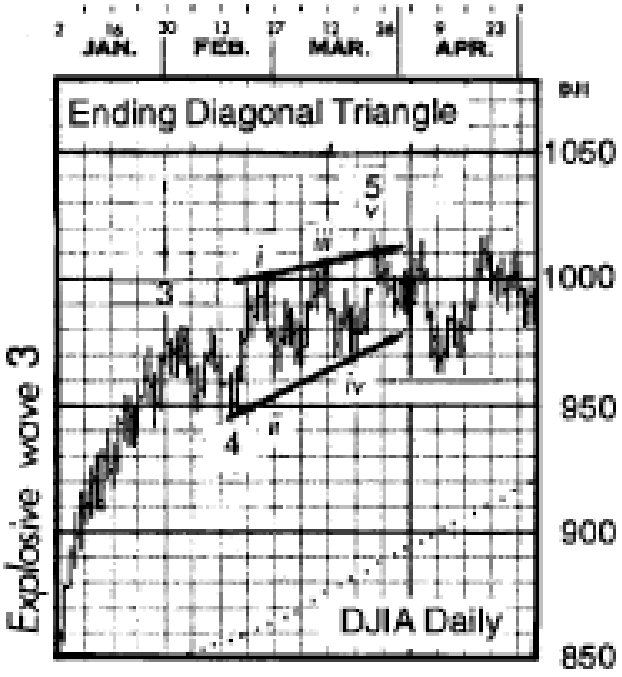


Figure 1-17

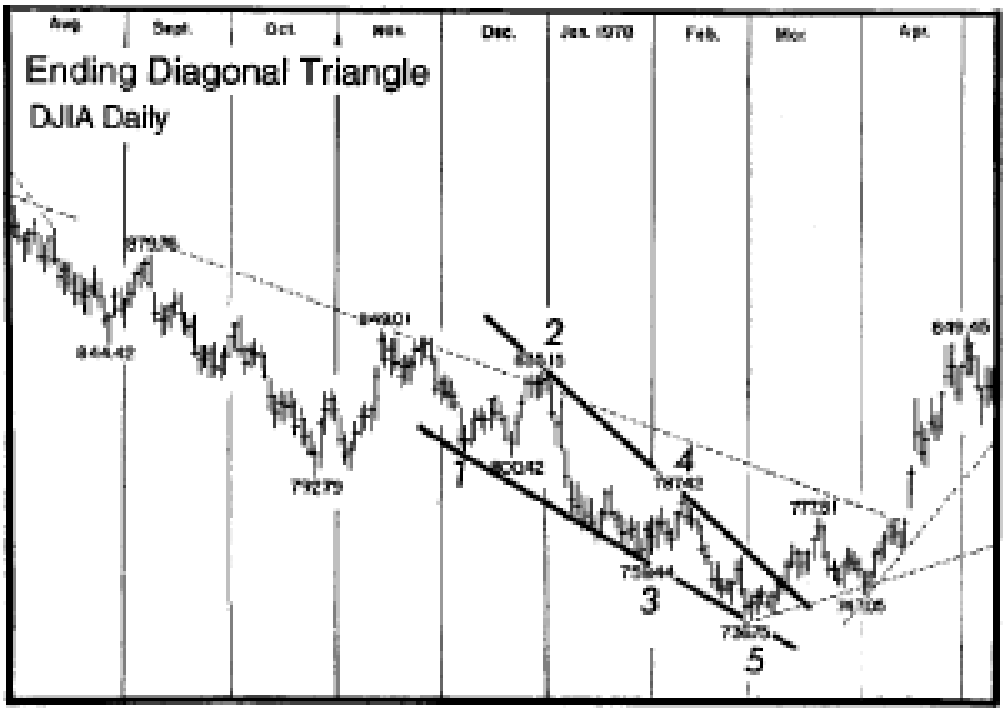


Figure 1-18

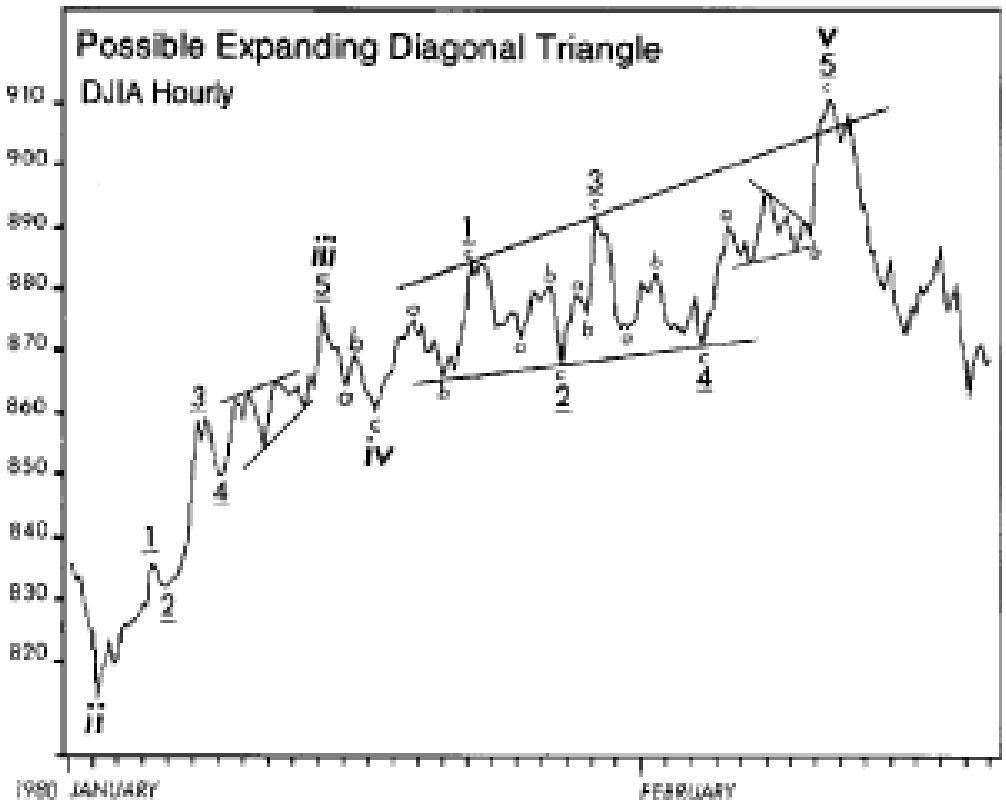


Figure 1-19

Although not so illustrated in Figures 1-15 and 1-16, fifth waves of diagonal tria often end in a "throw-over," i.e., a brief break of the trendline connecting the e points of waves one and three. Figures 1-17 and 1-19 show real life examples. volume tends to diminish as a diagonal triangle of small degree progresses, the pattern always ends with a spike of relatively high volume when a throw-over occurs. On rare occasions, the fifth subwave will fall short of its resistance trend

A rising diagonal is bearish and is usually followed by a sharp decline retracing least back to the level where it began. A falling diagonal by the same token is bullish, usually giving rise to an upward thrust.

Fifth wave extensions, truncated fifths and ending diagonal triangles all imply th same thing: *dramatic reversal ahead*. At some turning points, *two* of these phenomena have occurred together at different degrees, compounding the viole of the next move in the opposite direction.

3.3 Leading Diagonals

When diagonal triangles occur in the wave 5 or C position, they take the 3-3-3- shape that Elliott described. However, it has recently come to light that a variat on this pattern occasionally appears in the wave 1 position of impulses and in th wave A position of zigzags. The characteristic overlapping of waves 1 and 4 and convergence of boundary lines into a wedge shape remain as in the ending diag

triangle. However, the subdivisions are different, tracing out a 5-3-5-3-5 patter
The structure of this formation (see Figure 1-20) fits the spirit of the Wave Prin
in that the five-wave subdivisions in the direction of the larger trend communica
"continuation" message as opposed to the "termination" implication of the three
wave subdivisions in the ending diagonal. Analysts must be aware of this patter
avoid mistaking it for a far more common development, a series of first and sec
waves. The main key to recognizing this pattern is the decided slowing of price
change in the fifth subwave relative to the third. By contrast, in developing first
second waves, short term speed typically increases, and breadth (i.e., the num
stocks or subindexes participating) often expands.

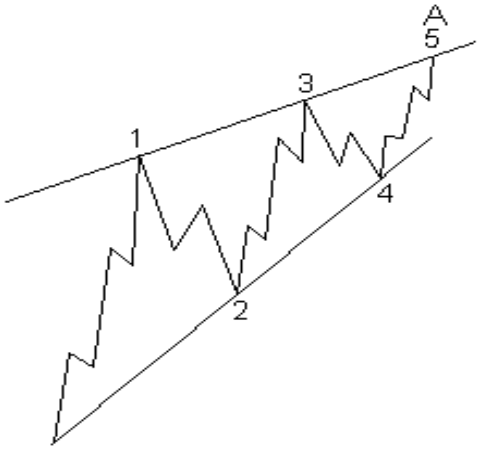


Figure 1-20

Figure 1-21 shows a real life example of a leading diagonal triangle. This patter
not originally discovered by R.N. Elliott but has appeared enough times and ove
long enough period that we are convinced of its validity.

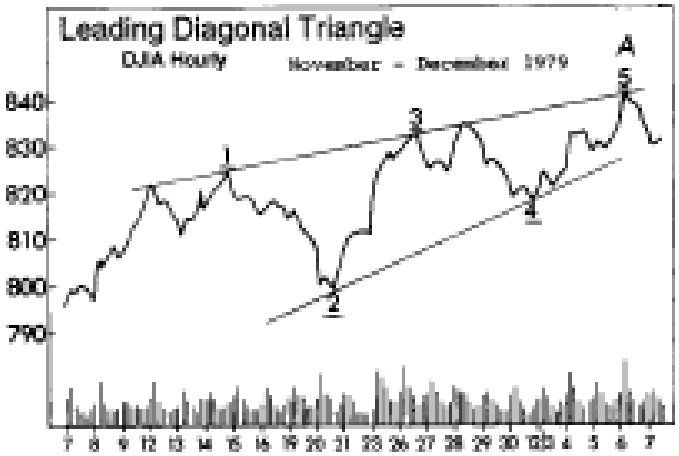


Figure 1-21

3.4 Corrective Waves

Markets move *against* the trend of one greater degree only with a seeming stru

Resistance from the larger trend appears to prevent a correction from developin full motive structure. This struggle between the two oppositely trending degrees generally makes corrective waves less clearly identifiable than motive waves, w always flow with comparative ease in the direction of the one larger trend. As another result of this conflict between trends, corrective waves are quite a bit m varied than motive waves. Further, they occasionally increase or decrease in complexity as they unfold so that what are technically subwaves of the same de can by their complexity or time length appear to be of different degree. For all t reasons, it can be difficult at times to fit corrective waves into recognizable patt until they are completed and behind us. As the terminations of corrective waves less predictable than those for motive waves, the Elliott analyst must exercise m caution in his analysis when the market is in a meandering corrective mood tha when prices are in a persistently motive trend.

The single most important rule that can be gleaned from a study of the various corrective patterns is that *corrections are never fives*. Only motive waves are fi For this reason, an initial five-wave movement against the larger trend is never end of a correction, only part of it. The figures that follow through Lesson 9 of t course should serve to illustrate this point.

Corrective processes come in two styles. *Sharp* corrections angle steeply agains larger trend. *Sideways* corrections, while always producing a net retracement o preceding wave, typically contain a movement that carries back to or beyond its starting level, thus producing an overall sideways appearance. The discussion o guideline of alternation in Lesson 10 will explain the reason for noting these two styles.

Specific corrective patterns fall into four main categories:

Zigzags (5-3-5; includes three types: single, double, and triple);

Flats (3-3-5; includes three types: regular, expanded, and running);

Triangles (3-3-3-3-3; four types: three of the contracting variety (ascending, descending, and symmetrical) and one of the expanding variety (reverse symmetrical);

Double threes and *triple threes* (combined structures).

3.5 Zigzags

A *single zigzag* in a bull market is a simple three-wave declining pattern labeled C. The subwave sequence is 5-3-5, and the top of wave B is noticeably lower th

the start of wave A, as illustrated in Figures 1-22 and 1-23.

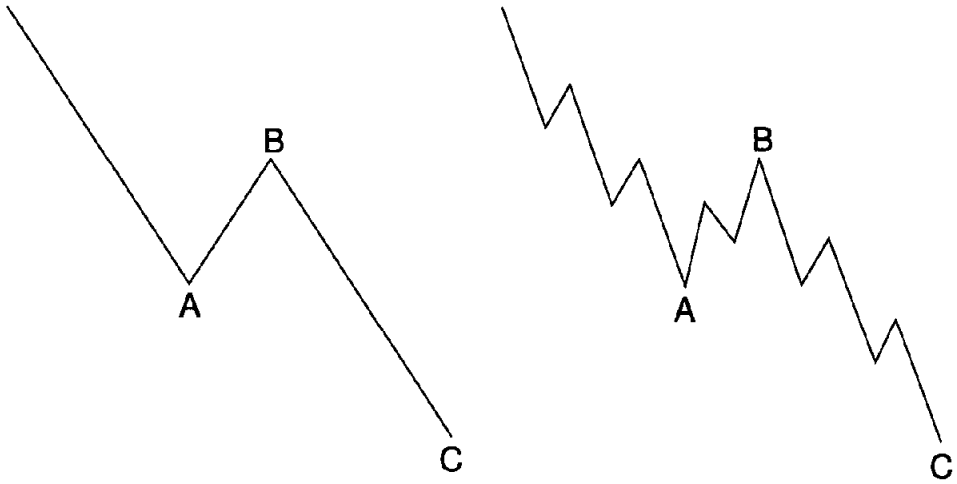


Figure 1-22 Figure 1-23

In a bear market, a zigzag correction takes place in the opposite direction, as s
in Figures 1-24 and 1-25. For this reason, a zigzag in a bear market is often ref
to as an inverted zigzag.

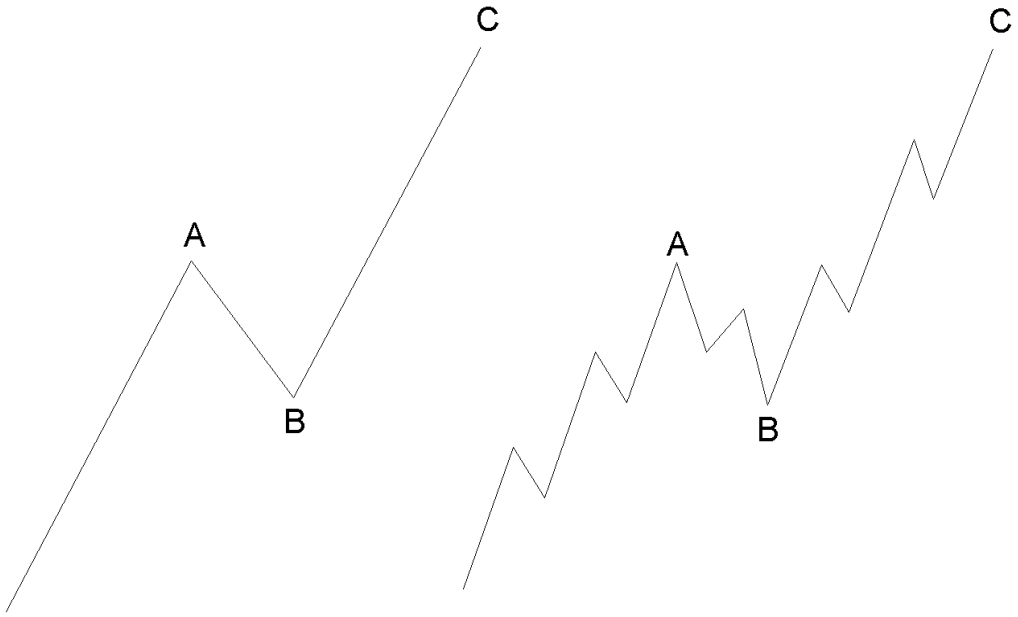


Figure 1-24 Figure 1-25

Occasionally zigzags will occur twice, or at most, three times in succession, particularly when the first zigzag falls short of a normal target. In these cases, zigzag is separated by an intervening "three," producing what is called a *double zigzag* (see Figure 1-26) or *triple zigzag*. These formations are analogous to the extension of an impulse wave but are less common.

The correction in the Standard and Poor's 500 stock index from

January 1977 to March 1978 (see Figure 1-27) can be labeled as a double zigza

can the correction in the Dow from July to October 1975 (see Figure 1-28). Wit
impulses, second waves frequently sport zigzags, while fourth waves rarely do.

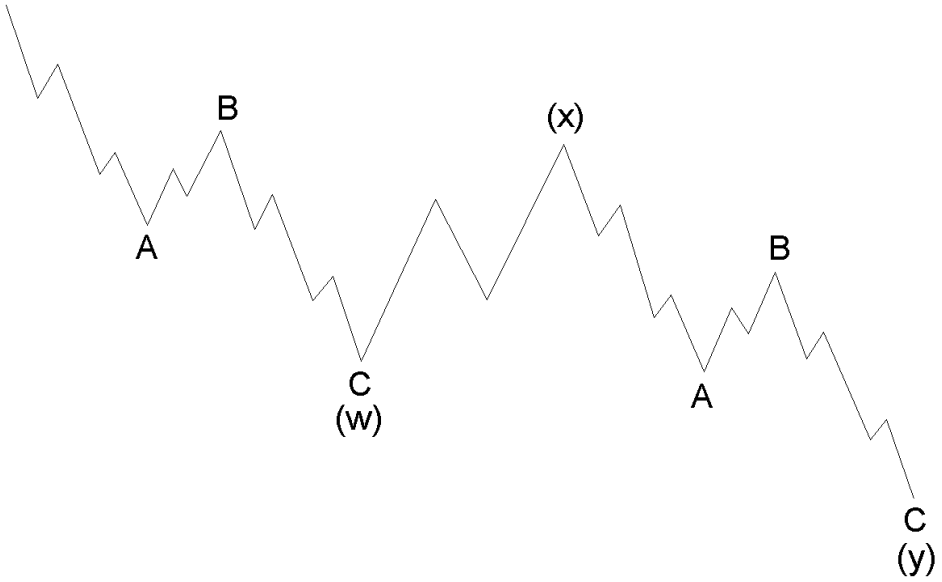


Figure 1-26

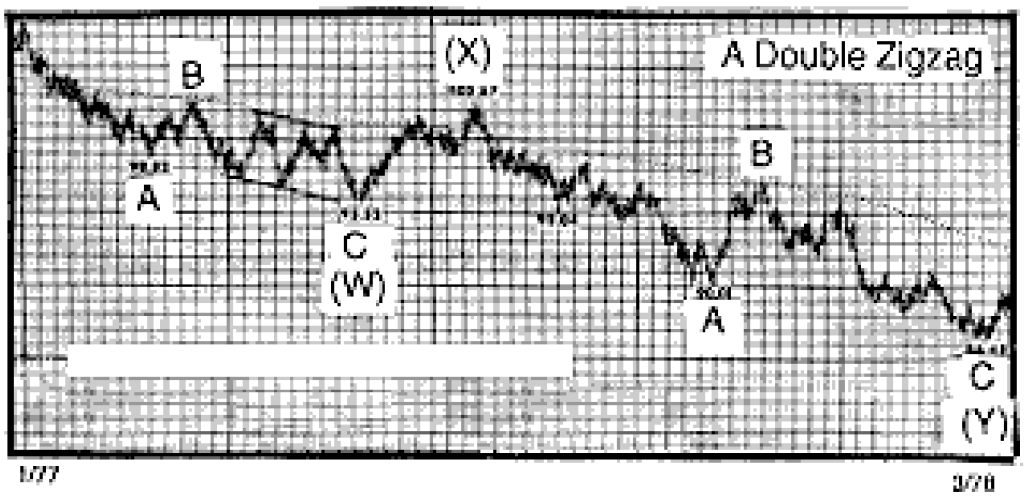


Figure 1-27

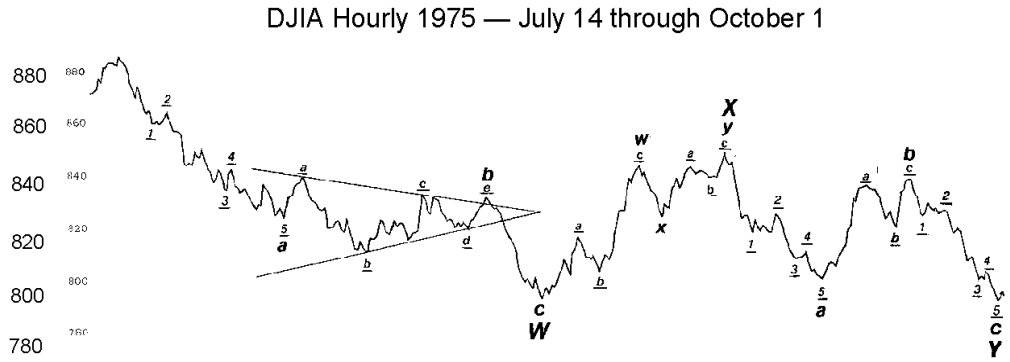


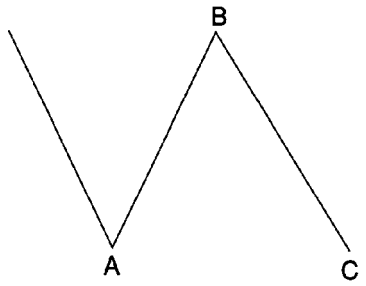
Figure 1-28

R.N. Elliott's original labeling of double and triple zigzags and double and triple

threes (see later section) was a quick shorthand. He denoted the intervening movements as wave X, so that double corrections were labeled A-B-C-X-A-B-C. Unfortunately, this notation improperly indicated the degree of the actionary subwaves of each simple pattern. They were labeled as being only one degree l than the entire correction when in fact, they are two degrees smaller. We have eliminated this problem by introducing a useful notational device: labeling the successive actionary components of double and triple corrections as waves W, Y Z, so that the entire pattern is counted "W-X-Y (-X-Z)." The letter "W" now den the first corrective pattern in a double or triple correction, Y the second, and Z third of a triple. Each subwave thereof (A, B or C, as well as D or E of a triangle see later section) is now properly seen as two degrees smaller than the entire correction. Each wave X is a reactionary wave and thus always a corrective wav typically another zigzag.

4.1 Flats (3-3-5)

A flat correction differs from a zigzag in that the subwave sequence is 3-3-5, as shown in Figures 1-29 and 1-30. Since the first actionary wave, wave A, lacks sufficient downward force to unfold into a full five waves as it does in a zigzag, wave reaction, not surprisingly, seems to inherit this lack of countertrend press and terminates near the start of wave A. Wave C, in turn, generally terminates slightly beyond the end of wave A rather than significantly beyond as in zigzags



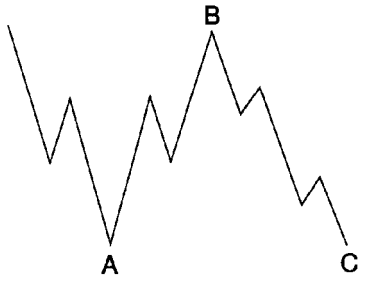
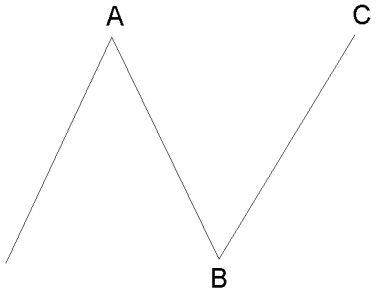


Figure 1-29 Figure 1-30

In a bear market, the pattern is the same but inverted, as shown in Figures 1-3 1-32.



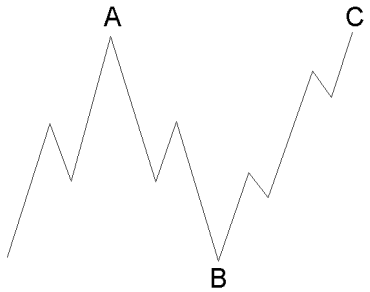


Figure 1-31 Figure 1-32

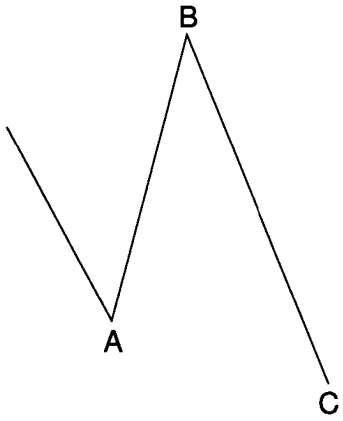
Flat corrections usually retrace less of preceding impulse waves than do zigzags They participate in periods involving a strong larger trend and thus virtually alw precede or follow extensions. The more powerful the underlying trend, the brief the flat tends to be. Within impulses, fourth waves frequently sport flats, while second waves do so less commonly.

What might be called "double flats" do occur. However, Elliott categorized such formations as "double threes," a term we discuss in Lesson 9.

The word "flat" is used as a catchall name for any A-B-C correction that subdivi into a 3-3-5. In Elliott literature, however, three types of 3-3-5 corrections have been identified by differences in their overall shape. In a *regular* flat correction, B terminates about at the level of the beginning of wave A, and wave C termina slight bit past the end of wave A, as we have shown in Figures 1-29 through 1- Far more common, however, is the variety called an *expanded* flat, which conta price extreme beyond that of the preceding impulse wave. Elliott called this var an "irregular" flat, although the word is inappropriate as they are actually far m common than "regular" flats.

4.2 Expanded Flats

In expanded flats, wave B of the 3-3-5 pattern terminates beyond the starting of wave A, and wave C ends more substantially beyond the ending level of wav as shown for bull markets in Figures 1-33 and 1-34 and bear markets in Figure 35 and 1-36. The formation in the DJIA from August to November 1973 was an expanded flat correction of this type in a bear market, or an "inverted expande flat" (see Figure 1-37).



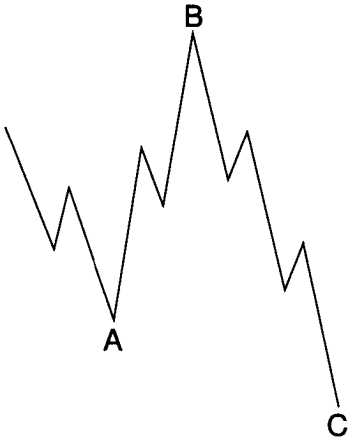
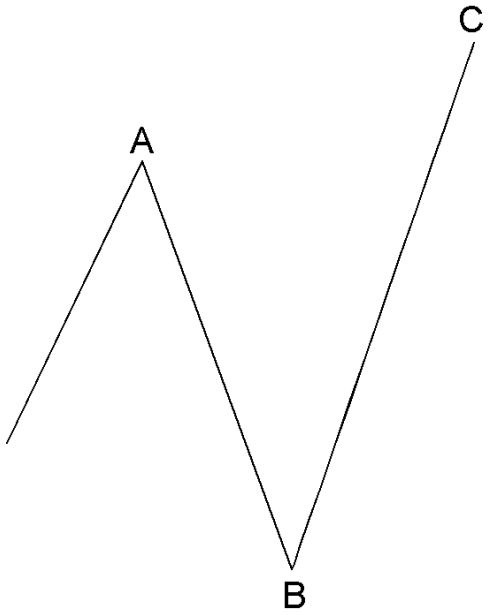


Figure 1-33 Figure 1-34



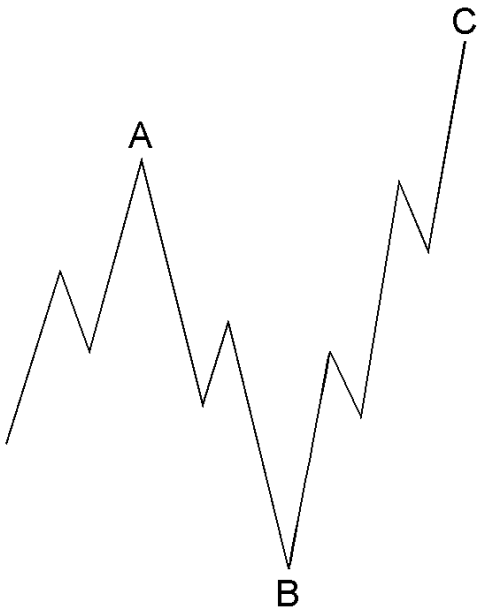


Figure 1-35 Figure 1-36

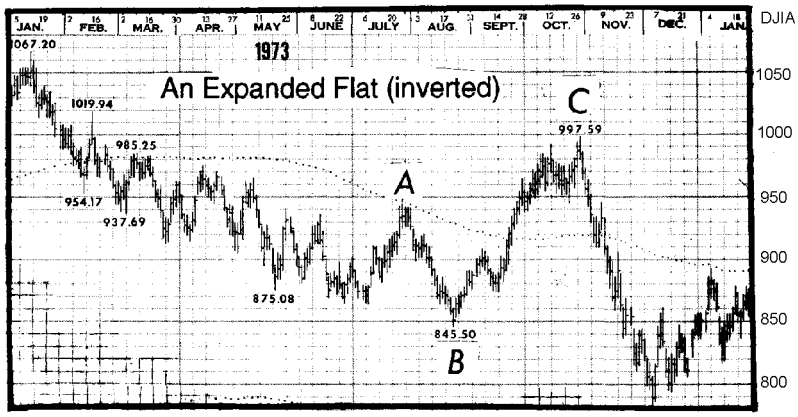
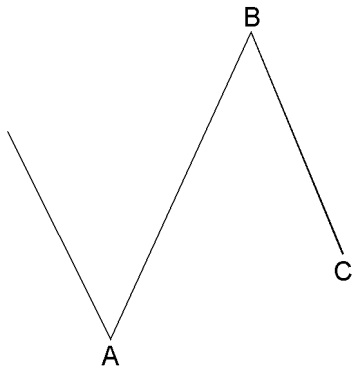


Figure 1-37

In a rare variation on the 3-3-5 pattern, which we call a *running* flat, wave B terminates well beyond the beginning of wave A as in an expanded flat, but wa fails to travel its full distance, falling short of the level at which wave A ended, Figures 1-38 through 1-41. Apparently in this case, the forces in the direction c larger trend are so powerful that the pattern becomes skewed in that direction. always important, but particularly when concluding that a running flat has take place, that the internal subdivisions adhere to Elliott's rules. If the supposed B wave, for instance, breaks down into five waves rather than three, it is more lik

the first wave up of the impulse of next higher degree. The power of adjacent impulse waves is important in recognizing running corrections, which tend to oc only in strong and fast markets. We must issue a warning, however. There are hardly any examples of this type of correction in the price record. Never label a correction prematurely this way, or you'll find yourself wrong nine times out of Running *triangles*, in contrast, are much more common, as we'll see in Lesson



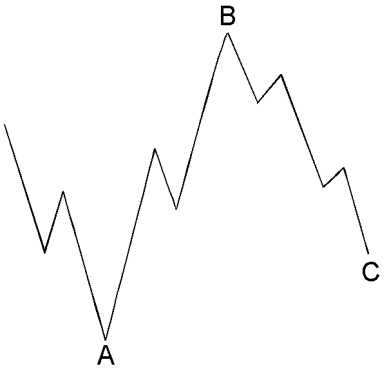
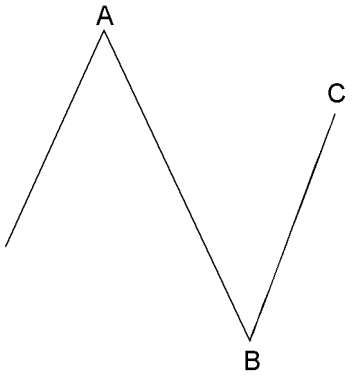
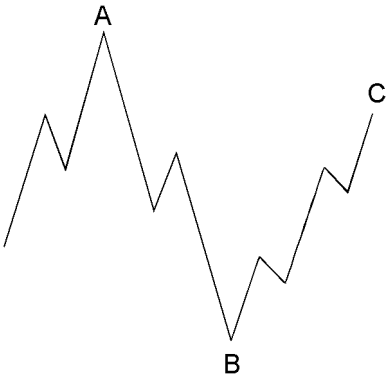


Figure 1-38 Figure 1-39





4.3 Triangles

Triangles appear to reflect a balance of forces, causing a sideways movement tl usually associated with decreasing volume and volatility. Triangles contain five overlapping waves that subdivide 3-3-3-3-3 and are labeled a-b-c-d-e. A triang delineated by connecting the termination points of waves a and c, and b and d. Wave e can undershoot or overshoot the a-c line, and in fact, our experience te that it happens more often than not.

There are two varieties of triangles: contracting and expanding. Within the contracting variety, there are three types: symmetrical, ascending, and descen as illustrated in Figure 1-42. There are no variations on the rarer expanding tria It always appears as depicted in Figure 1-42, which is why Elliott termed it a "reverse symmetrical" triangle.

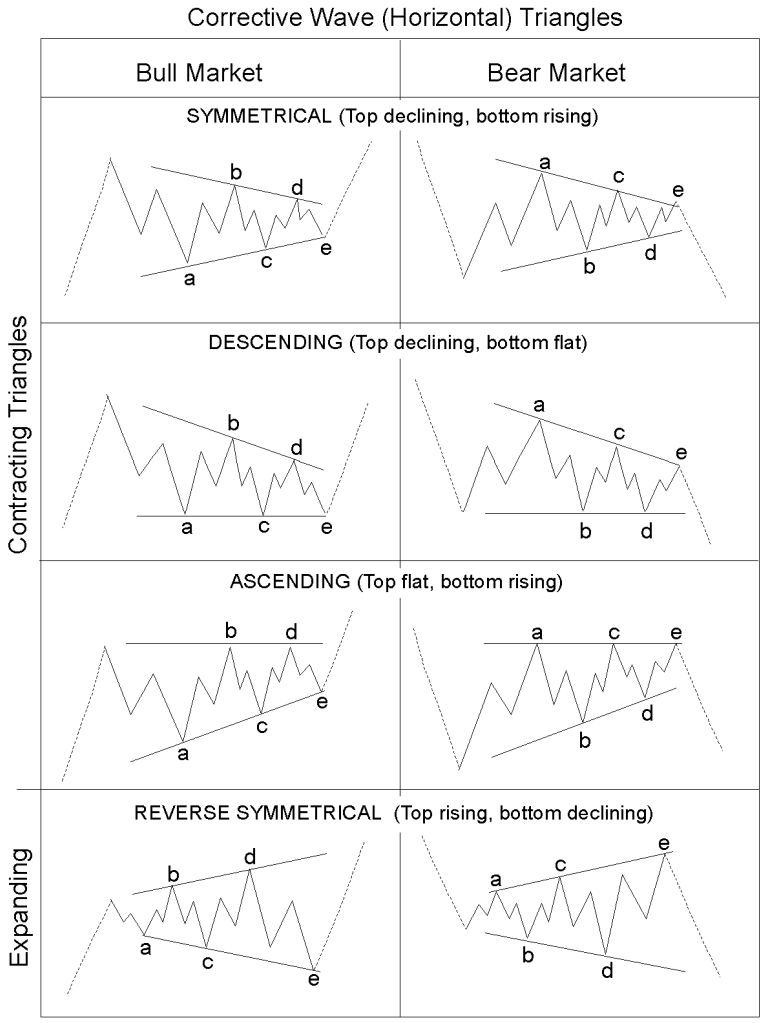


Figure 1-42

Figure 1-42 depicts contracting triangles as taking place within the area of prec price action, in what may be termed *regular* triangles. However, it is extremely common for wave b of a contracting triangle to exceed the start of wave a in wl may be termed a *running* triangle, as shown in Figure 1-43. Despite their sidew appearance, *all* triangles, including running triangles, effect a net retracement c preceding wave at wave e's end.

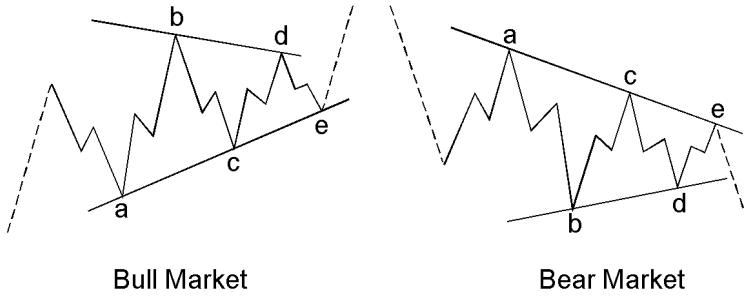


Figure 1-43

4.4 Triangle Examples

There are several real life examples of triangles in the charts in this course. A will notice, most of the subwaves in a triangle are zigzags, but sometimes one the subwaves (usually wave c) is more complex than the others and can take shape of a regular or expanded flat or multiple zigzag. In rare cases, one of th sub-waves (usually wave e) is itself a triangle, so that the entire pattern protr into nine waves. Thus, triangles, like zigzags, occasionally display a developm that is analogous to an extension. One example occurred in silver from 1973 through 1977 (see Figure 1-44).

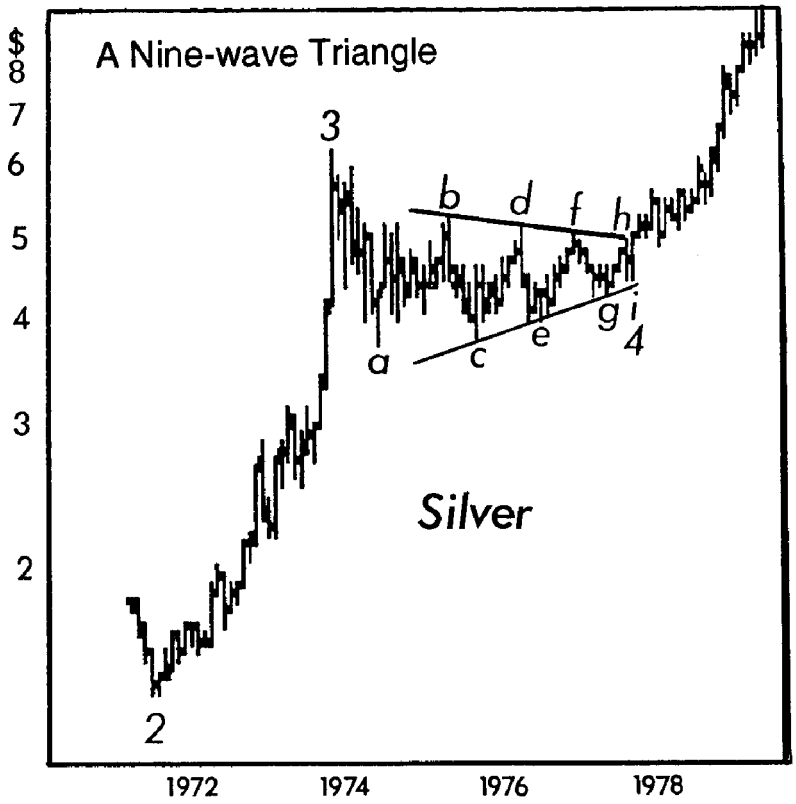


Figure 1-44

Although upon extremely rare occasions a second wave in an impulse appears take the form of a triangle, triangles nearly always occur in positions *prior to* final actionary wave in the pattern of one larger degree, i.e., as wave four in impulse, wave B in an A-B-C, or the final wave X in a double or triple zig-zag combination (to be shown in Lesson 9). A triangle may also occur as the final actionary pattern in a corrective combination, as discussed in Lesson 9, althou even then it always precedes the final actionary wave in the pattern of one la degree than the corrective combination.

In the stock market, when a triangle occurs in the fourth wave position, wave is sometimes swift and travels approximately the distance of the widest part o triangle. Elliott used the word "thrust" in referring to this swift, short motive w

wave. So if a fifth wave following a triangle pushes past a normal thrust measurement, it is signaling a likely protracted wave. Post-triangle advancing impulses in commodities at degrees above Intermediate are usually the longe wave in the sequence, as explained in Lesson 29.

On the basis of our experience with triangles, as the example in Figure 3-15 illustrates, we propose that often the time at which the boundary lines of a contracting triangle reach an apex coincides exactly with a turning point in th market. Perhaps the frequency of this occurrence would justify its inclusion a the guidelines associated with the Wave Principle.

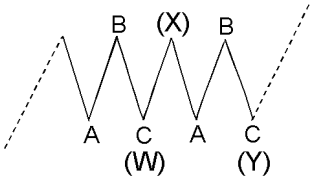
The term "horizontal" as applied to triangles refers to these corrective triangl general, as opposed to the term "diagonal," which refers to those motive triangular formations discussed in Lesson 5. Thus, the terms "horizontal trian and "diagonal triangle" denote these specific forms under the Wave Principle. simpler terms "triangle" and "wedge" may be substituted, but keep in mind th technical chart readers have long used these terms to communicate less specifically subdivided forms defined only by overall shape. Having separate t can be useful.

5.1 Corrective Combinations

Double and Triple Threes

Elliott called sideways combinations of corrective patterns "double threes" and "triple threes." While a single three is any zigzag or flat, a triangle is an allowable final component of such combinations and in this context is called a "three." A double or triple three, then, is a combination of simpler types of corrections, including the various types of zigzags, flats and triangles. Their occurrence appears to be the flat correction's way of extending sideways action. As with double and triple zigzags, each simple corrective pattern is labeled W, Y and Z. The reactionary waves, labeled X, can take the shape of any corrective pattern but are most commonly zigzags.

Combinations of threes were labeled differently by Elliott at different times, although the illustrative pattern always took the shape of two or three juxtaposed flats, as shown in Figures 1-45 and 1-46. However, the component patterns more commonly alternate in form. For example, a flat followed by a triangle is a more typical type of double three, as illustrated in Figure 1-47.



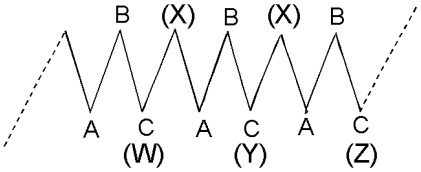


Figure 1-45 Figure 1-46

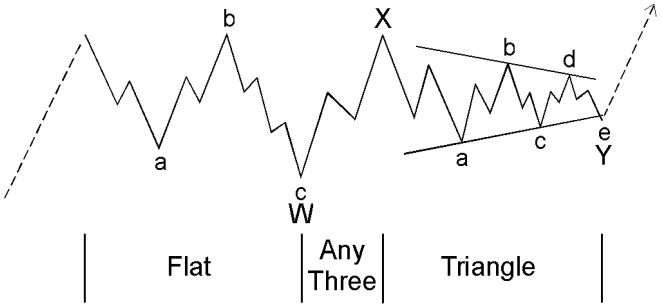


Figure 1-47

A flat followed by a zigzag is another example, as shown in Figure 1-48. Naturally, since the figures in this section depict corrections in bull markets, they need only be inverted to observe them as upward corrections in bear markets.

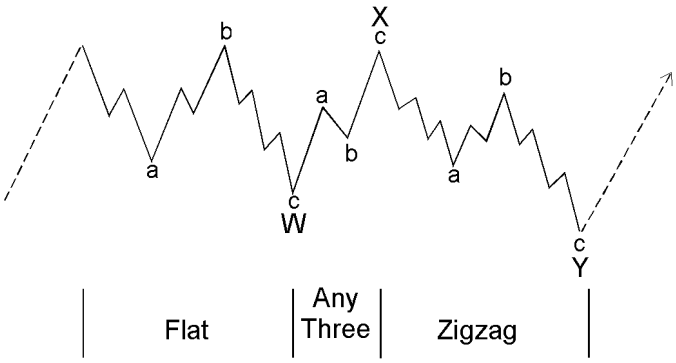


Figure 1-48

For the most part, double threes and triple threes are horizontal in character. Elliott indicated that the entire formations could slant against the larger trend, although we have never found this to be the case. One reason is that there never appears to be more than one zigzag in a combination. Neither is there more than one triangle. Recall that triangles occurring alone precede the final movement of a larger trend. Combinations appear to recognize this character and sport triangles only as the final wave in a double or triple three.

Although different in that their angle of trend is sharper than the sideways trend of combinations, double and triple zigzags can be characterized as non-horizontal combinations, as Elliott seemed to suggest in *Nature's Law*. However, double and triple threes are different from double and triple zigzags, not only in their angle but in their goal. In a double or triple zigzag, the first zigzag is rarely large enough to constitute an adequate price correction of the preceding wave. The doubling or tripling of the initial form is typically necessary to create an adequately sized *price* retracement. In a combination, however, the first simple pattern often constitutes an adequate price correction. The doubling or tripling appears to occur mainly to extend the *duration* of the corrective process after price targets have been substantially met. Sometimes additional time is needed to reach a channel line or achieve a stronger kinship with the other correction in an impulse wave. As the consolidation continues, the attendant psychology and fundamentals extend their trends accordingly.

As this section makes clear, there is a qualitative difference between the number series **3** + 4 + 4 + 4, etc., and the series **5** + 4 + 4 + 4, etc. Notice that while impulse waves have a total count of 5, with extensions leading to 9, 13 or 17 waves, and so on, corrective waves have a count of 3, with combinations leading to 7 or 11 waves, and so on. Triangles appear to be an exception, although they can be counted as one would a triple three, totaling 11 waves. Thus, if an internal count is unclear, the analyst can sometimes reach a reasonable conclusion merely by counting waves. A count of 9, 13 or 17 with few overlaps, for instance, is likely motive, while a count of 7, 11 or 15 with numerous overlaps is likely corrective. The main exceptions are diagonal triangles of both types, which are hybrids of motive and corrective forces.

Orthodox Tops and Bottoms

Sometimes a pattern's end differs from the associated price extreme. In such cases, the end of the pattern is called the "orthodox" top or bottom in order to differentiate it from the actual price high or low that occurs intra-pattern. For example, in Figure 1-11, the end of wave 5 is the orthodox top despite the fact that wave 3 registered a higher price. In Figure 1-12, the end of wave 5 is the orthodox bottom. In Figures 1-33 and 1-34, the starting point of wave A is the orthodox top of the preceding bull market despite the higher high of wave B. In Figure 1-47, the end of wave Y is the orthodox bottom of the bear market even though the price low occurs at the end of wave W.

This concept is important primarily because a successful analysis always depends upon a proper labeling of the patterns. Assuming falsely that a particular price extreme is the correct starting point for wave labeling can throw analysis off for some time, while being aware of the requirements of wave form will keep you on track. Further, when applying the forecasting concepts that will be introduced in Lessons 20 through 25, the length and duration of a wave are typically determined by measuring from and projecting orthodox ending points.

5.3 Reconciling Function and mode

In Lessons 3 and 4, we described the two functions waves may perform (action reaction), as well as the two modes of structural development (motive and corrective) that they undergo. Now that we have reviewed all types of waves, w summarize their labels as follows:

— The labels for actionary waves are 1, 3, 5, A, C, E, W, Y and Z.

— The labels for reactionary waves are 2, 4, B, D and X.

As stated earlier, *all* reactionary waves develop in corrective mode, and *most* actionary waves develop in motive mode. The preceding sections have describe which actionary waves develop in corrective mode. They are:

— waves 1, 3 and 5 in an ending diagonal,

— wave A in a flat correction,

— waves A, C and E in a triangle,

— waves W and Y in double zigzags and double corrections,

— wave Z in triple zigzags and triple corrections.

Because the waves listed above are actionary in relative direction yet develop i corrective mode, we term them "actionary corrective" waves.

As far as we know, we have listed all wave formations that can occur in the pric movement of the broad stock market averages. Under the Wave Principle, no o formations than those listed here will occur. Indeed, since the hourly readings a nearly perfectly matched filter for detailing waves of Subminuette degree, the authors can find no examples of waves above the Subminuette degree that cannot be counted satisfactorily by the Elliott method. fact, Elliott Waves of much smaller degree than Subminuette are revealed by

computer generated charts of minute-by-minute transactions. Even the few dat points (transactions) per unit of time at this low a degree are enough to reflect accurately the Wave Principle of human behavior by recording the rapid shifts i psychology occurring in the "pits" and on the exchange floor. All rules (which w covered in Lessons 1 through 9) and guidelines (which are covered in Lessons 1 through 15) fundamentally apply to actual market mood, not its recording *per s* lack thereof. Its clear manifestation requires free market pricing. When prices a fixed by government edict, such as those for gold and silver for half of the twen century, waves restricted by the edict are not allowed to register. When the ava price record differs from what might have existed in a free market, rules and guidelines must be considered in that light. In the long run, of course, markets always win out over edicts, and edict enforcement is only possible if the mood c market allows it. All rules and guidelines presented in this course presume that price record is accurate. Now that we have presented the rules and rudiments c wave formation, we can move on to some of the guidelines for successful analy under the Wave Principle.

5.5 Alternation within Corrective Waves

If a large correction begins with a flat a-b-c construction for wave A, expect a z a-b-c formation for wave B (see Figure 2-2), and vice versa (see Figure 2-3). W moment's thought, it is obvious that this occurrence is sensible, since the first illustration reflects an upward bias in both subwaves while the second reflects a downward bias.

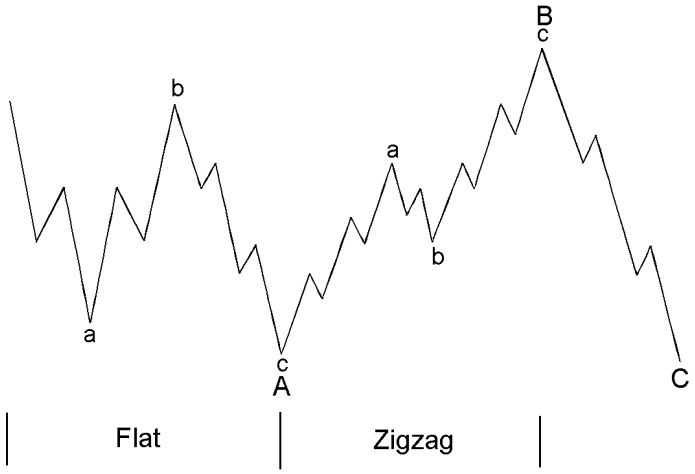


Figure 2-2

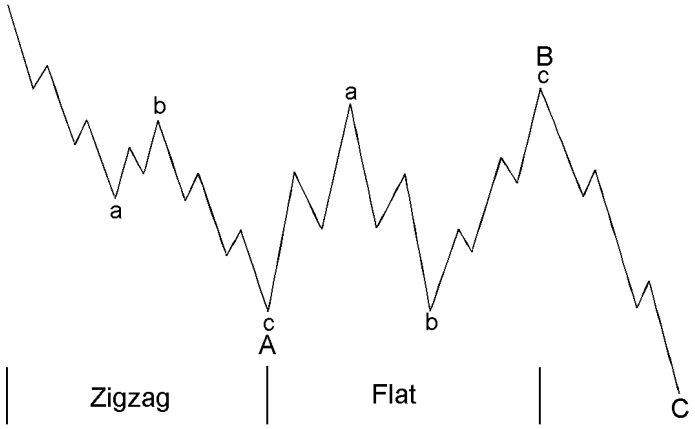


Figure 2-3

Quite often, if a large correction begins with a simple a-b-c zigzag for wave A, w
B will stretch out into a more intricately subdivided a-b-c zigzag to achieve a ty
alternation, as in Figure 2-4. Sometimes wave C will be yet more complex, as in
Figure 2-5. The reverse order of complexity is somewhat less common.

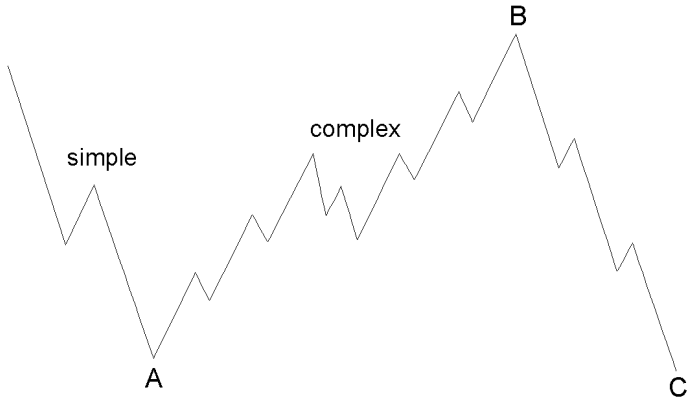


Figure 2-4

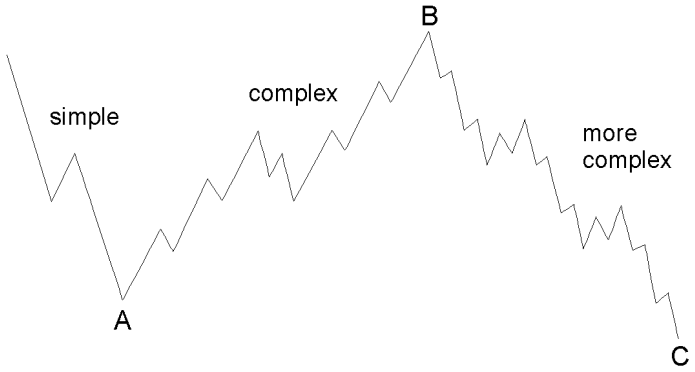


Figure 2-5

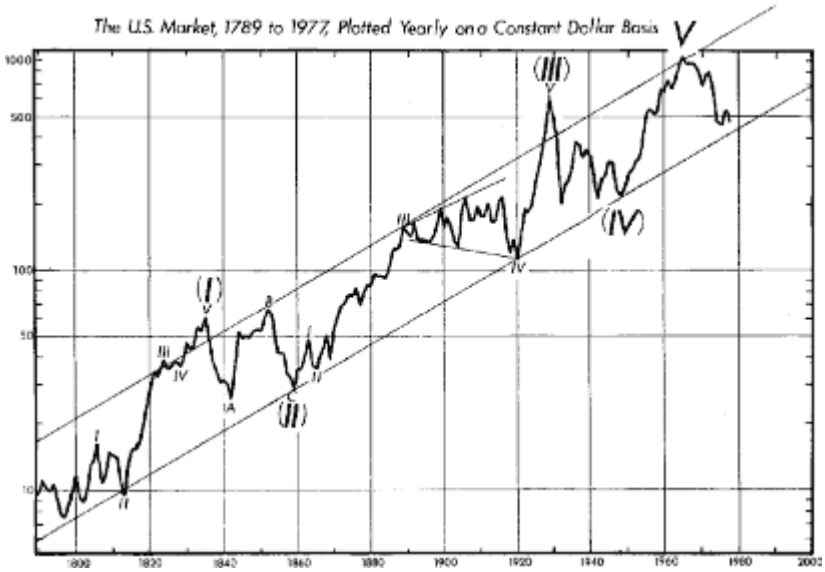
5.6 Forecasting Corrective Waves

Depth of Corrective Waves (Bear Market Limitations)

No market approach other than the Wave Principle gives as satisfactory an answ
the question, "How far down can a bear market be expected to go?" The primar
guideline is that corrections, especially when they themselves are fourth waves
to register their maximum retracement within the span of travel of the previous
fourth wave of one lesser degree, most commonly near the level of its terminus

Example #1: The 1929-1932 Bear Market

The chart of stock prices adjusted to constant dollars developed by the Foundat
for the Study of Cycles shows a contracting triangle as wave (IV). Its lows botto
within the area of the previous fourth wave of Cycle degree, an expanding trian
(see chart below).



Example #2: The 1942 Bear Market Low

In this case, the Cycle degree wave II bear market from 1937 to 1942, a zigzag
terminates within the area of Primary wave [4] of the bull market from 1932 to
(see Figure 5-3).

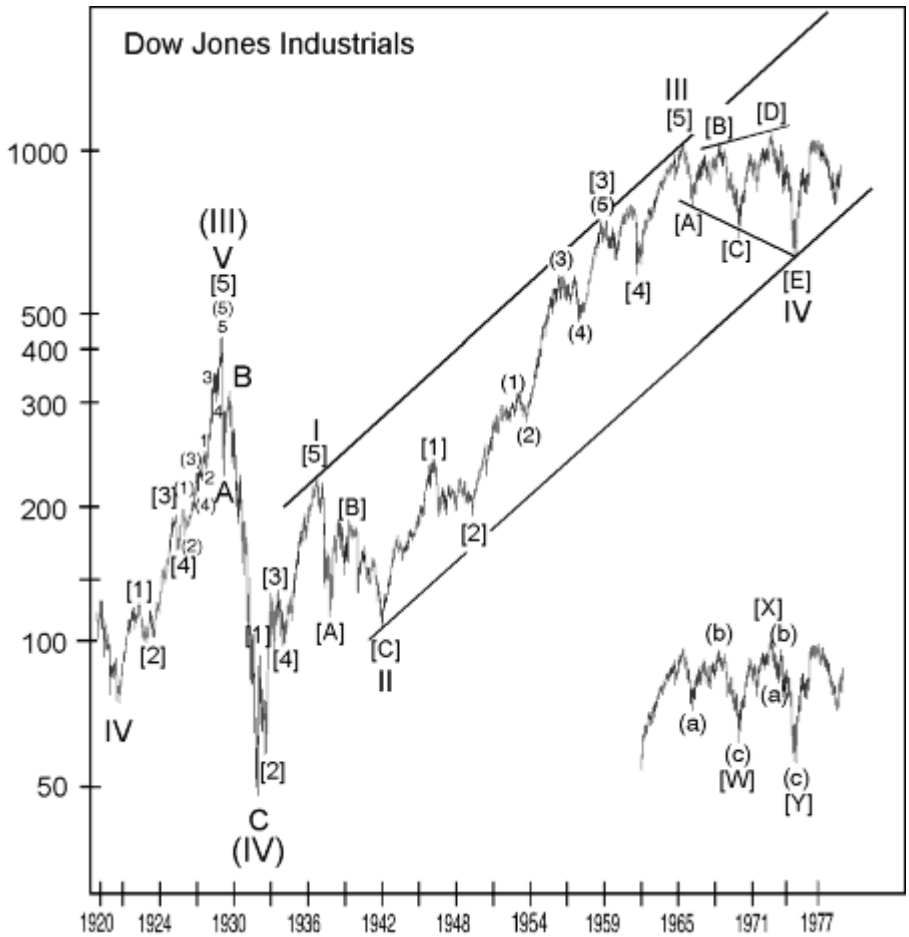


Figure 5-3

Example #3: The 1962 Bear Market Low

The wave [4] plunge in 1962 brought the averages down to just above the 195
of the five-wave Primary sequence from 1949 to 1959. Ordinarily, the bear wou
have reached into the zone of wave (4), the fourth wave correction within wave
This narrow miss nevertheless illustrates why this guideline is not a rule. The
preceding strong third wave extension and the shallow A wave and strong B wa
within [4] indicated strength in the wave structure, which carried over into the
moderate net depth of the correction (see Figure 5-3).

5.7 Wave Extensions

Example #4: The 1974 Bear Market Low

The final decline into 1974, ending the 1966-1974 Cycle degree wave IV correc
of the entire wave III rise from 1942, brought the averages down to the area o
previous fourth wave of lesser degree (Primary wave[4]). Again, Figure 5-3 sh
what happened.

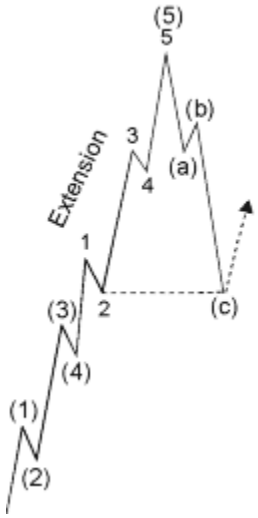
Our analysis of small degree wave sequences over the last twenty years further validates the proposition that the usual limitation of any bear market is the trav area of the preceding fourth wave of one lesser degree, particularly when the b market in question is itself a fourth wave. However, in a clearly reasonable modification of the guideline, it is often the case that if the *first* wave in a seque extends, the correction following the fifth wave will have as a typical limit the b of the *second* wave of lesser degree. For example, the decline into March 1978 DJIA bottomed exactly at the low of the second wave in March 1975, which follo an extended first wave off the December 1974 low.

On occasion, flat corrections or triangles, particularly those following extensions Example #3), will barely fail to reach into the fourth wave area. Zigzags, on occasion, will cut deeply and move down into the area of the second wave of les degree, although this almost exclusively occurs when the zigzags are themselve second waves. "Double bottoms" are sometimes formed in this manner.

Behavior Following Fifth Wave Extensions

The most important empirically derived rule that can be distilled from our observations of market behavior is that when the fifth wave of an advance is an extension, the ensuing correction will be sharp and find support at the level of t low of wave two of the extension. Sometimes the correction will end there, as illustrated in Figure 2-6. Although a limited number of real life examples exist, t precision with which "A" waves have reversed at the level of the low of wave tw the preceding fifth wave extension is remarkable. Figure 2-7 is an illustration involving an expanded flat correction. (For future reference, please make a note two real-life examples that we will show in charts of upcoming lessons. An exar involving a zigzag can be found in Figure 5-3 at the low of wave [a] of II, and a example involving an expanded flat can be found in Figure 2-16 at the low of w of A of 4. As you will see in Figure 5-3, wave A of (IV) bottoms near wave (2) o which is an extension within wave V from 1921 to 1929.)

Since the low of the second wave of an extension is commonly in or near the pr territory of the immediately preceding fourth wave of one larger degree, this guideline implies behavior similar to that for the preceding guideline. It is notab its *precision*, however. Additional value is provided by the fact that fifth wave extensions are typically followed by *swift* retracements. Their occurrence, then, advance warning of a dramatic reversal to a specific level, a powerful combinati knowledge. This guideline does not apply separately to fifth wave extensions *of* wave extensions.



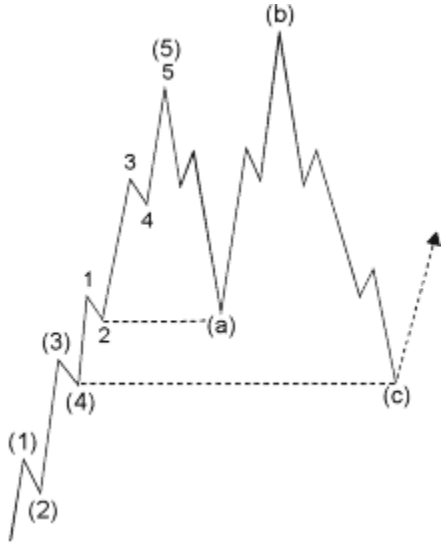


Figure 2-6 *Figure 2-7*

6.1 Channeling

Wave Equality

One of the guidelines of the Wave Principle is that two of the motive waves in a wave sequence will tend toward equality in time and magnitude. This is general true of the two non-extended waves when one wave is an extension, and it is especially true if the third wave is the extension. If perfect equality is lacking, a multiple is the next likely relationship (the use of ratios is covered in Lessons 1

When waves are larger than Intermediate degree, the price relationships usuall must be stated in percentage terms. Thus, within the entire extended Cycle wa advance from 1942 to 1966, we find that Primary wave [1] traveled 120 points gain of 129%, in 49 months, while Primary wave [5] traveled 438 points, a gai 80% (.618 times the 129% gain), in 40 months (see Figure 5-3), far different f the 324% gain of the third Primary wave, which lasted 126 months.

When the waves are of Intermediate degree or less, the price equality can usua stated in arithmetic terms, since the percentage lengths will also be nearly equivalent. Thus, in the year-end rally of 1976, we find that wave 1 traveled 35 points in 47 market hours while wave 5 traveled 34.40 points in 47 market hou The guideline of equality is often extremely accurate.

Charting the Waves

A. Hamilton Bolton always kept an "hourly close" chart, i.e., one showing the e hour prices, as do the authors. Elliott himself certainly followed the same practi since in *The Wave Principle* he presents an hourly chart of stock prices from Feb

23 to March 31, 1938. Every Elliott Wave practitioner, or anyone interested in t
Wave Principle, will find it instructive and useful to plot the hourly fluctuations o
DJIA, which are published by *The Wall Street Journal* and *Barron's*. It is a simpl
task that requires only a few minutes' work a week. Bar charts are fine but can
misleading by revealing fluctuations that occur near the time changes for each
but not those that occur within the time for the bar. Actual print figures must b
used on all plots. The so-called "opening" and "theoretical intraday" figures pub
for the Dow averages are statistical inventions that do not reflect the averages
any particular moment. Respectively, these figures represent a sum of the oper
prices, which can occur at different times, and of the daily highs or lows of each
individual stock in the average regardless of the time of day each extreme occu

The foremost aim of wave classification is to determine where prices are in the
market's progression. This exercise is easy as long as the wave counts are clea
in fast-moving, emotional markets, particularly in impulse waves, when minor
movements generally unfold in an uncomplicated manner. In these cases, short
charting is necessary to view all subdivisions. However, in lethargic or choppy
markets, particularly in corrections, wave structures are more likely to be comp
and slow to develop. In these cases, longer term charts often effectively conden
the action into a form that clarifies the pattern in progress. With a proper readi
the Wave Principle, there are times when sideways trends can be forecasted (fo
instance, for a fourth wave when wave two is a zigzag). Even when anticipated,
though, complexity and lethargy are two of the most frustrating occurrences fo
analyst. Nevertheless, they are part of the reality of the market and must be ta
into account. The authors highly recommend that during such periods you take
time off from the market to enjoy the fruits of your hard work. You can't "wish"
market into action; it isn't listening. When the market rests, do the same.

The correct method for tracking the stock market is to use semilogarithmic cha
paper, since the market's history is sensibly related only on a percentage basis.
investor is concerned with percentage gain or loss, not the number of points tra
in a market average. For instance, ten points in the DJIA in 1980 meant nothing
one percent move. In the early 1920s, ten points meant a ten percent move, qu
bit more important. For ease of charting, however, we suggest using semilog sc
only for long term plots, where the difference is especially noticeable. Arithmeti
scale is quite acceptable for tracking hourly waves since a 300 point rally with t
DJIA at 5000 is not much different in percentage terms from a 300 point rally w
the DJIA at 6000. Thus, channeling techniques work acceptably well on arithme
scale with shorter term moves.

6.2 Channeling Technique

Elliott noted that parallel trend channels typically mark the upper and lower boundaries of impulse waves, often with dramatic precision. The analyst should them in advance to assist in determining wave targets and provide clues to the future development of trends.

The initial channeling technique for an impulse requires at least three reference points. When wave three ends, connect the points labeled "1" and "3," then dra parallel line touching the point labeled "2," as shown in Figure 2-8. This constru provides an estimated boundary for wave four. (In most cases, third waves trav enough that the starting point is excluded from the final channel's touch points.

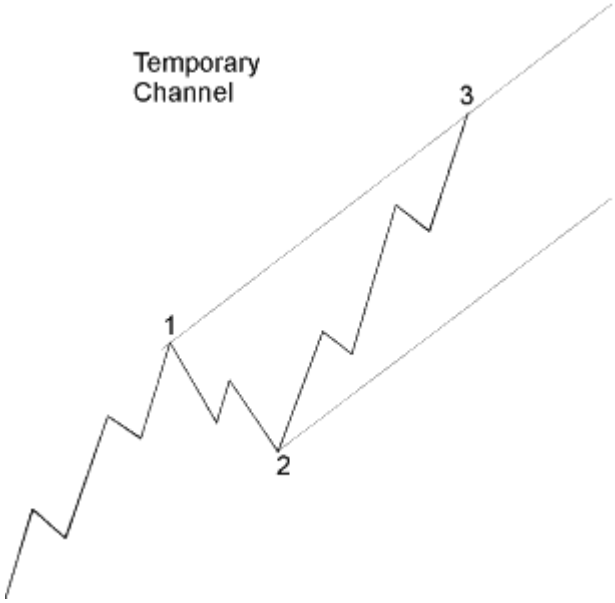


Figure 2-8

If the fourth wave ends at a point not touching the parallel, you must reconstru channel in order to estimate the boundary for wave five. First connect the ends waves two and four. If waves one and three are normal, the upper parallel mos accurately forecasts the end of wave five when drawn touching the peak of wav three, as in Figure 2-9. If wave three is abnormally strong, almost vertical, ther parallel drawn from its top may be too high. Experience has shown that a paral the baseline that touches the top of wave one is then more useful, as in the illustration of the rise in the price of gold bullion from August 1976 to March 19 (see Figure 6-12). In some cases, it may be useful to draw both potential upper boundary lines to alert you to be especially attentive to the wave count and vol characteristics at those levels and then take appropriate action as the wave cou warrants.

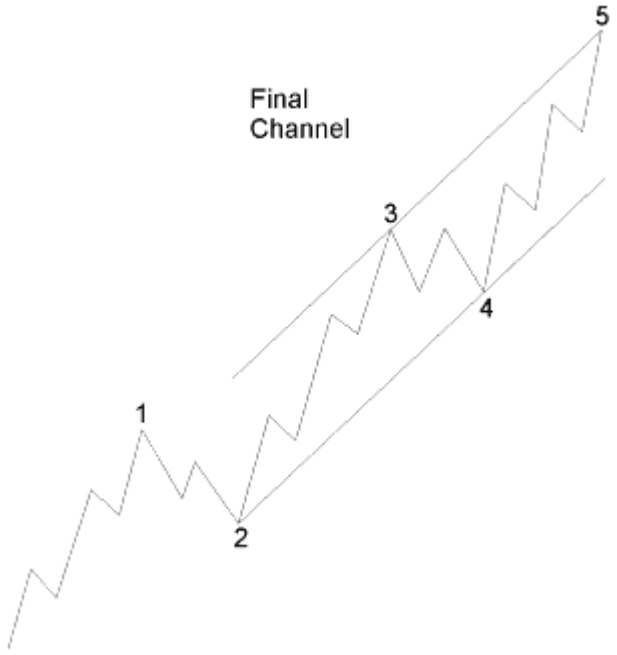


Figure 2-9

Figure 6-12

Throw-over

Within parallel channels and the converging lines of diagonal triangles, if a fifth approaches its upper trendline on declining volume, it is an indication that the e the wave will meet or fall short of it. If volume is heavy as the fifth wave appro its upper trendline, it indicates a possible penetration of the upper line, which E called "throw-over." Near the point of throw-over, a fourth wave of small degre may trend sideways immediately below the parallel, allowing the fifth then to b it in a final gust of volume.

Throw-overs are occasionally telegraphed by a preceding "throw-*under*," either wave 4 or by wave two of 5, as suggested by the drawing shown as Figure 2-10

from Elliott's book, *The Wave Principle*. They are confirmed by an immediate re
back below the line. Throw-overs also occur, with the same characteristics, in
declining markets. Elliott correctly warned
that throw-overs at large degrees cause difficulty in identifying the waves of sm
degree during the throw-over, as smaller degree channels are sometimes penet
on the upside by the final fifth wave. Examples of throw-overs shown earlier in
course can be found in Figures 1-17 and 1-19.

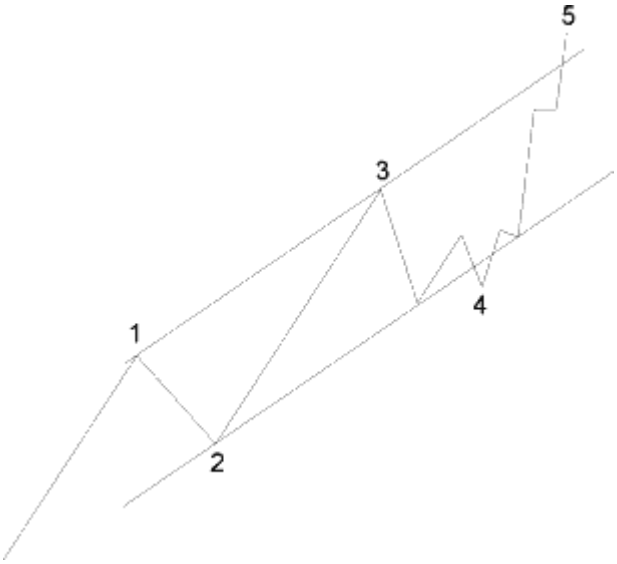


Figure 2-10

6.3 More Guidelines

Scale

The larger the degree, the more necessary a semilog scale usually becomes. Or
other hand, the virtually perfect channels that were formed by the 1921-1929
market on semilog scale (see Figure 2-11) and the 1932-1937 market on arithr
scale (see Figure 2-12) indicate that waves of the same degree will form the co
Elliott trend channel only when plotted selectively on the appropriate scale. On
arithmetic scale, the 1920s bull market accelerates beyond the upper boundary
while on semilog scale the 1930s bull market falls far short of the upper bounda
Aside from this difference in channeling, these two waves of Cycle dimension ar
surprisingly similar: they create nearly the same multiples in price (six times ar
five times respectively), they both contain extended fifth waves, and the peak o
third wave is the same percentage gain above the bottom in each case. The ess
difference between the two bull markets is the shape and time length of each
individual subwave.

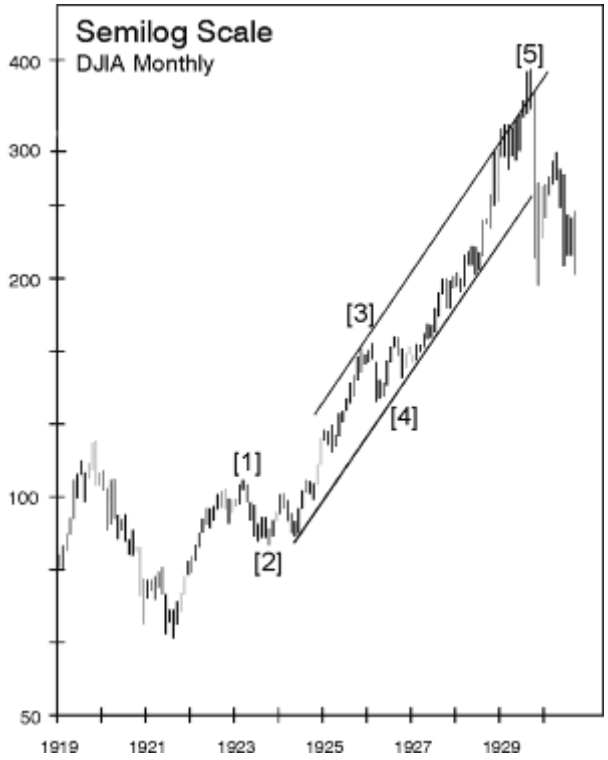


Figure 2-11

Figure 2-12

At most, we can state that the necessity for semilog scale indicates a wave that
the process of acceleration, for whatever mass psychological reasons. Given a s
price objective and a specific length of time allotted, anyone can draw a satisfac
hypothetical Elliott Wave channel from the same point of origin on both arithme
and semilog scale by adjusting the slope of the waves to fit. Thus, the question
whether to expect a parallel channel on arithmetic or semilog scale is still unres
as far as developing a definite tenet on the subject. If the price development at
point does not fall neatly within two parallel lines on the scale (either arithmetic
semilog) you are using, switch to the other scale in order to observe the channe
correct perspective. To stay on top of all developments, the analyst should alwa
use both.

6.4 Volume

Elliott used volume as a tool for verifying wave counts and in projecting extensi He recognized that in any bull market, volume has a natural tendency to expan contract with the speed of price change. Late in a corrective phase, a decline in volume often indicates a decline in selling pressure. A low point in volume often coincides with a turning point in the market. In normal fifth waves below Prima degree, volume tends to be less than in third waves. If volume in an advancing wave of less than Primary degree is equal to or greater than that in the third wa an extension of the fifth is in force. While this outcome is often to be expected anyway if the first and third waves are about equal in length, it is an excellent warning of those rare times when both a third *and* a fifth wave are extended.

At Primary degree and greater, volume tends to be higher in an advancing fifth merely because of the natural long term growth in the number of participants in markets. Elliott noted, in fact, that volume at the terminal point of a bull marke above Primary degree tends to run at an all-time high. Finally, as discussed ear volume often spikes briefly at points of throw-over at the peak of fifth waves, whether at a trend channel line or the terminus of a diagonal triangle. (Upon occasion, such points can occur simultaneously, as when a diagonal triangle fift wave terminates right at the upper parallel of the channel containing the price a of one larger degree.) In addition to these few valuable observations, we have expanded upon the importance of volume in various sections of this course.

The "Right Look"

The overall appearance of a wave must conform to the appropriate illustration. Although any five-wave sequence can be forced into a three-wave count by labe the first three subdivisions as one wave "A" as shown in Figure 2-13, it is incorr do so. The Elliott system would break down if such contortions were allowed. A wave three with the end of wave four terminating well above the top of wave on must be classified as a five-wave sequence. Since wave A in this hypothetical ca composed of three waves, wave B would be expected to drop to about the start wave A, as in a flat correction, which it clearly does not. While the internal coun wave is a guide to its classification, the right overall shape is, in turn, often a gu to its correct internal count.

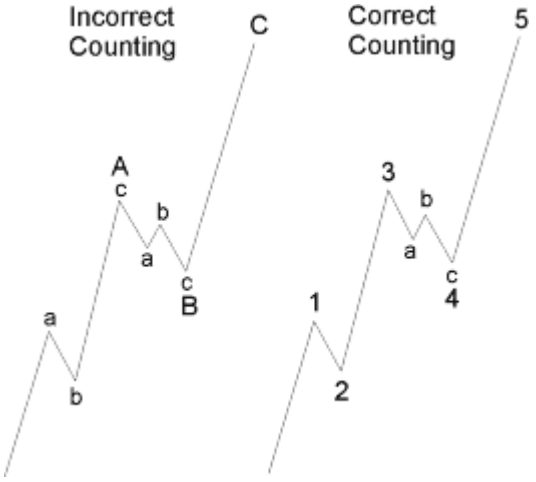


Figure 2-13

The "right look" of a wave is dictated by all the considerations we have outlined far in the first two chapters. In our experience, we have found it extremely dangerous to allow our emotional involvement with the market to let us accept counts that reflect disproportionate wave relationships or misshapen patterns m on the basis that the Wave Principle's patterns are somewhat elastic.

7.1 Wave Personality

The idea of wave personality is a substantial expansion of the Wave Principle. It the advantages of bringing human behavior more personally into the equation a even more important, of enhancing the utility of standard technical analysis.

The personality of each wave in the Elliott sequence is an integral part of the reflection of the mass psychology it embodies. The progression of mass emotion from pessimism to optimism and back again tends to follow a similar path each around, producing similar circumstances at corresponding points in the wave structure. The personality of each wave type is usually manifest whether the wa of Grand Supercycle degree or Subminuette. These properties not only forewarn analyst about what to expect in the next sequence but at times can help determ one's present location in the progression of waves, when for other reasons the is unclear or open to differing interpretations. As waves are in the process of unfolding, there are times when several different wave counts are perfectly admissible under all known Elliott rules. It is at these junctures that a knowledg wave personality can be invaluable. If the analyst recognizes the character of a single wave, he can often correctly interpret the complexities of the larger patte The following discussions relate to an underlying bull market picture, as illustra Figures 2-14 and 2-15. These observations apply in reverse when the actionary waves are downward and the reactionary waves are upward.

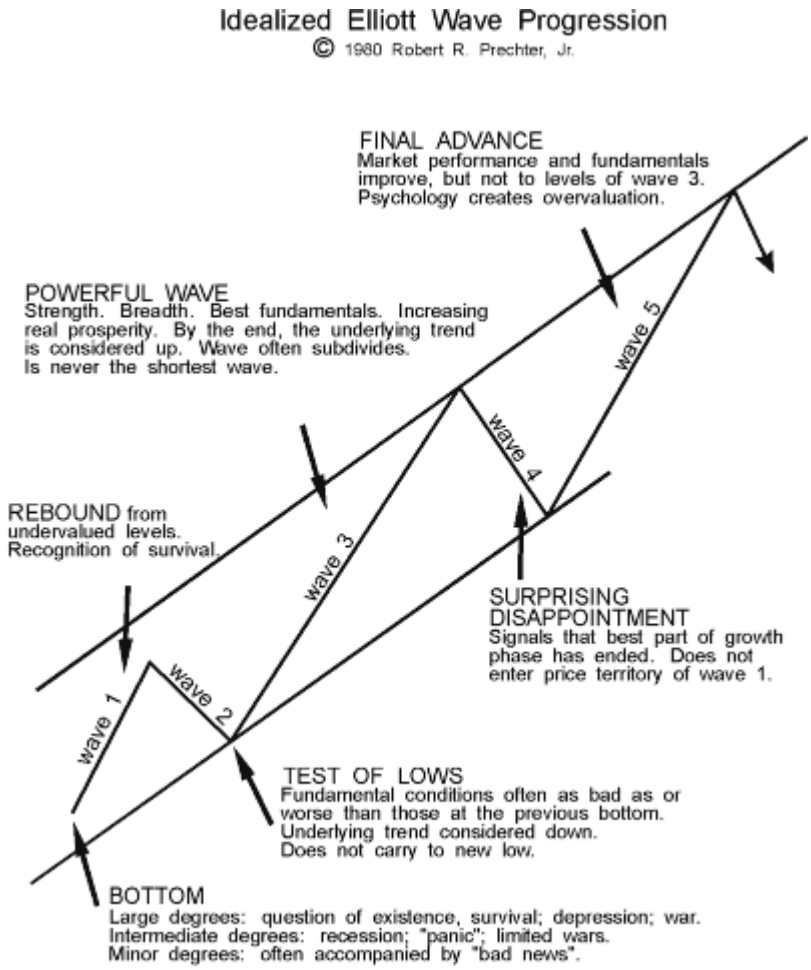


Figure 2-14

7.2 Wave Personality

1) **First** waves — As a rough estimate, about half of first waves are part of the "basing" process and thus tend to be heavily corrected by wave two. In contras the bear market rallies within the previous decline, however, this first wave rise technically more constructive, often displaying a subtle increase in volume and breadth. Plenty of short selling is in evidence as the majority has finally become convinced that the overall trend is down. Investors have finally gotten "one mo rally to sell on," and they take advantage of it. The other fifty percent of first w rise from either large bases formed by the previous correction, as in 1949, from downside failures, as in 1962, or from extreme compression, as in both 1962 a 1974. From such beginnings, first waves are dynamic and only moderately retra

2) **Second** waves — Second waves often retrace so much of wave one that mo the advancement up to that time is eroded away by the time it ends. This is especially true of call option purchases, as premiums sink drastically in the environment of fear during second waves. At this point, investors are thorough convinced that the bear market is back to stay. Second waves often produce

downside non-confirmations and Dow Theory "buy spots," when low volume an
volatility indicate a drying up of selling pressure.

3) **Third** waves — Third waves are wonders to behold. They are strong and bro
and the trend at this point is unmistakable. Increasingly favorable fundamental
enter the picture as confidence returns. Third waves usually generate the great
volume and price movement and are most often the extended wave in a series.
follows, of course, that the third wave of a third wave, and so on, will be the m
volatile point of strength in any wave sequence. Such points invariably produce
breakouts, "continuation" gaps, volume expansions, exceptional breadth, major
Theory trend confirmations and runaway price movement, creating large hourly
daily, weekly, monthly or yearly gains in the market, depending on the degree
wave. Virtually all stocks participate in third waves. Besides the personality of "
waves, that of third waves produces the most valuable clues to the wave count
unfolds.

4) **Fourth** waves — Fourth waves are predictable in both depth (see Lesson 11
form, because by alternation they should differ from the previous second wave
same degree.
More often than not they trend sideways, building the base for the final fifth wa
move. Lagging stocks build their tops and begin declining during this wave, sinc
only the strength of a third wave was able to generate any motion in them in th
first place. This initial deterioration in the market sets the stage for non-
confirmations and subtle signs of weakness during the fifth wave.

5) **Fifth** waves — Fifth waves in stocks are always less dynamic than third wave
terms of breadth. They usually display a slower maximum speed of price chang
well, although if a fifth wave is an extension, speed of price change in the third
the fifth can exceed that of the third wave. Similarly, while it is common for vol
to increase through successive impulse waves at Cycle degree or larger, it usua
happens below Primary degree only if the fifth wave extends. Otherwise, look fo
lesser volume as a rule in a fifth wave as opposed to the third. Market dabblers
sometimes call for "blowoffs" at the end of long trends, but the stock market ha
history of reaching maximum acceleration at a peak. Even if a fifth wave extend
the fifth of the fifth will lack the dynamism of what preceded it. During fifth
advancing waves, optimism runs extremely high, despite a narrowing of breadt
Nevertheless, market action does improve relative to prior corrective wave ralli
For example, the year-end rally in 1976 was unexciting in the Dow, but it was
nevertheless a motive wave as opposed to the preceding corrective wave advar
in April, July and September, which, by contrast, had even less influence on the
secondary indexes and the cumulative advance-decline line. As a monument to
optimism that fifth waves can produce, the market forecasting services polled t
weeks after the conclusion of that rally turned in the lowest percentage of "bear
4.5%, in the history of the recorded figures *despite* that fifth wave's failure to m

a new high!

7.3 Ideal Wave Personality

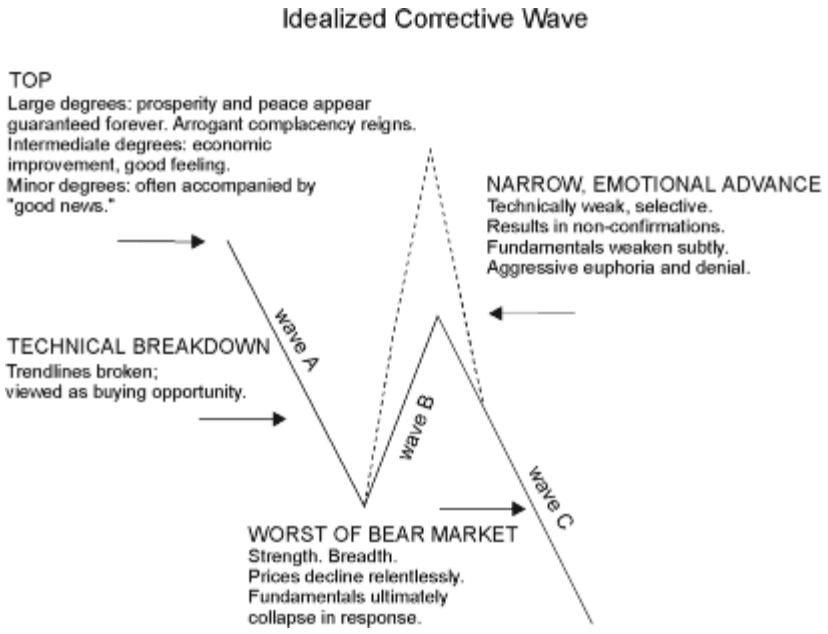


Figure 2-15

6) **"A"** waves — During "A" waves of bear markets, the investment world is generally convinced that this reaction is just a pullback pursuant to the next leg advance. The public surges to the buy side despite the first really technically damaging cracks in individual stock patterns. The "A" wave sets the tone for the wave to follow. A five-wave A indicates a zigzag for wave B, while a three-wave indicates a flat or triangle.

7) **"B"** waves — "B" waves are phonies. They are sucker plays, bull traps, speculators' paradise, orgies of odd-lotter mentality or expressions of dumb institutional complacency (or both). They often involve a focus on a narrow list stocks, are often "unconfirmed" (Dow Theory is covered in Lesson 28) by other averages, are rarely technically strong, and are virtually always doomed to com retracement by wave C. If the analyst can easily say to himself, "There is some wrong with this market," chances are it's a "B" wave. "X" waves and "D" waves expanding triangles, both of which are corrective wave advances, have the same characteristics. Several examples will suffice to illustrate the poi

— The upward correction of 1930 was wave B within the 1929-1932 A-B-C zigz decline. Robert Rhea describes the emotional climate well in his opus, *The Story the Averages* (1934):

...many observers took it to be a bull market signal. I can remember having sh

stocks early in December, 1929, after having completed a satisfactory short pos
in October. When the slow but steady advance of January and February carried
above [the previous high], I became panicky and covered at considerable loss.
forgot that the rally might normally be expected to retrace possibly 66 percent
more of the 1929 downswing. Nearly everyone was proclaiming a new bull mar
Services were extremely bullish, and the upside volume was running higher tha
the peak in 1929.

— The 1961-1962 rise was wave (b) in an (a)-(b)-(c) expanded flat correction.
the top in early 1962, stocks were selling at unheard of price/earnings multiples
had not been seen up to that time and have not been seen since. Cumulative
breadth had already peaked along with the top of the third wave in 1959.

— The rise from 1966 to 1968 was wave [B]* in a corrective pattern of Cycle de
Emotionalism had gripped the public and "cheapies" were skyrocketing in the
speculative fever, unlike the orderly and usually fundamentally justifiable
participation of the secondaries within first and third waves. The Dow Industrial
struggled unconvincingly higher throughout the advance and finally refused to
confirm the phenomenal new highs in the secondary indexes.

— In 1977, the Dow Jones Transportation Average climbed to new highs in a "B
wave, miserably unconfirmed by the Industrials. Airlines and truckers were slug
Only the coal-carrying rails were participating as part of the energy play. Thus,
breadth within the index was conspicuously lacking, confirming again that good
breadth is generally a property of impulse waves, not corrections.

As a general observation, "B" waves of Intermediate degree and lower usually s
a diminution of volume, while "B" waves of Primary degree and greater can disp
volume heavier than that which accompanied the preceding bull market, usually
indicating wide public participation.

8) **"C"** waves — Declining "C" waves are usually devastating in their destruction
They are third waves and have most of the properties of third waves. It is durin
decline that there is virtually no place to hide except cash. The illusions held
throughout waves A and B tend to evaporate and fear takes over. "C" waves ar
persistent and broad. 1930-1932 was a "C" wave. 1962 was a "C" wave. 1969-
and 1973-1974 can be classified as "C" waves. Advancing "C" waves within upw
corrections in larger bear markets are just as dynamic and can be mistaken for
start of a new upswing, especially since they unfold in five waves. The October
rally (see Figure 1-37), for instance, was a "C" wave in an inverted expanded fl
correction.

9) **"D"** waves — "D" waves in all but expanding triangles are often accompanie
increased volume. This is true probably because "D" waves in non-expanding
triangles are hybrids, part corrective, yet having some characteristics of first wa

since they follow "C" waves and are not fully retraced. "D" waves, being advanc within corrective waves, are as phony as "B" waves. The rise from 1970 to 197 wave [D] within the large wave IV of Cycle degree. The "one-decision" complac that characterized the attitude of the average institutional fund manager at the is well documented. The area of participation again was narrow, this time the "r fifty" growth and glamour issues. Breadth, as well as the Transportation Averag topped early, in 1972, and refused to confirm the extremely high multiples best upon the favorite fifty. Washington was inflating at full steam to sustain the illu prosperity during the entire advance in preparation for the election. As with the preceding wave [B], "phony" was an apt description.

10) **"E"** waves — "E" waves in triangles appear to most market observers to be dramatic kickoff of a new downtrend after a top has been built. They almost alw are accompanied by strongly supportive news. That, in conjunction with the tendency of "E" waves to stage a false breakdown through the triangle boundar line, intensifies the bearish conviction of market participants at precisely the tim that they should be preparing for a substantial move in the opposite direction. T "E" waves, being ending waves, are attended by a psychology as emotional as t of fifth waves.

7.4 Wave Tendencies

Because the tendencies discussed here are not inevitable, they are stated not a rules, but as guidelines. Their lack of inevitability nevertheless detracts little fro their utility. For example, take a look at Figure 2-16, an hourly chart showing th first four Minor waves in the DJIA rally off the March 1, 1978 low. The waves ar textbook Elliott from beginning to end, from the length of waves to the volume pattern (not shown) to the trend channels to the guideline of equality to the retracement by the "a" wave following the extension to the expected low for the fourth wave to the perfect internal counts to alternation to the Fibonacci time sequences to the Fibonacci ratio relationships embodied within. It might be wor noting that 914 would be a reasonable target in that it would mark a .618 retracement of the 1976-1978 decline.

Figure 2-16 (Click Image To Enlarge)

There are exceptions to guidelines, but without those, market analysis would be science of exactitude, not one of probability. Nevertheless, with a thorough knowledge of the guide lines of wave structure, you can be quite confident of yo wave count. In effect, you can use the market action to confirm the wave count well as use the wave count to predict market action.

Notice also that Elliott Wave guidelines cover most aspects of traditional technic analysis, such as market momentum and investor sentiment. The result is that traditional technical analysis now has a greatly increased value in that it serves aid the identification of the market's exact position in the Elliott Wave structure that end, using such tools is by all means encouraged.

7.5 Learning the Basics

With a knowledge of the tools in Lessons 1 through 15, any dedicated student c perform expert Elliott Wave analysis. People who neglect to study the subject thoroughly or to apply the tools rigorously have given up before really trying. T best learning procedure is to keep an hourly chart and try to fit all the wiggles i Elliott Wave patterns, while keeping an open mind for all the possibilities. Slowl scales should drop from your eyes, and you will continually be amazed at what see.

It is important to remember that while investment tactics always must go with most valid wave count, knowledge of alternative possibilities can be extremely helpful in adjusting to unexpected events, putting them immediately into perspective, and adapting to the changing market framework. While the rigiditi the rules of wave formation are of great value in choosing entry and exit points flexibilities in the admissible patterns eliminate cries that whatever the market doing now is "impossible."

"When you have eliminated the impossible, whatever remains, *however improb* must be the truth." Thus eloquently spoke Sherlock Holmes to his constant companion, Dr. Watson, in Arthur Conan Doyle's *The Sign of Four*. This one sen is a capsule summary of what one needs to know to be successful with Elliott. T best approach is deductive reasoning. By knowing what Elliott rules will not allo one can deduce that whatever remains must be the most likely course for the market. Applying all the rules of extensions, alternation, overlapping, channelin volume and the rest, the analyst has a much more formidable arsenal than one might imagine at first glance. Unfortunately for many, the approach requires th and work and rarely provides a mechanical signal. However, this kind of thinkin basically an elimination process, squeezes the best out of what Elliott has to off and besides, it's fun!

As an example of such deductive reasoning, take another look at Figure 1-14, reproduced below:

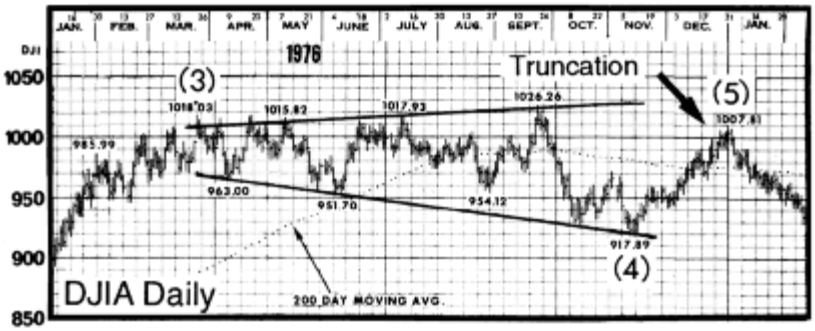


Figure 1-14

Cover up the price action from November 17, 1976 forward. Without the wave l and boundary lines, the market would appear as formless. But with the Wave Principle as a guide, the meaning of the structures becomes clear. Now ask you how would you go about predicting the next movement? Here is Robert Prechte analysis from that date, from a personal letter to A.J. Frost, summarizing a rep issued for Merrill Lynch the previous day:

Enclosed you will find my current opinion outlined on a recent Trendline chart, although I use only hourly point charts to arrive at these conclusions. My argun is that the third Primary wave, begun in October of 1975, *has not completed* its course as yet, and that the fifth Intermediate wave of that Primary is now unde First and most important, I am convinced that October 1975 to March 1976 was far a three-wave affair, not a five, and that only the possibility of a failure on M 11th could complete that wave as a five. However, the construction *following* th possible "failure" does not satisfy me as correct, since the first downleg to 956. would be of five waves and the entire ensuing construction is obviously a flat. Therefore, I think that we have been in a fourth corrective wave since March 24 This corrective wave satisfies *completely* the requirements for an expanding tria

formation, which of course can only be a fourth wave. The trendlines concernec uncannily accurate, as is the downside objective, obtained by multiplying the fir important length of decline (March 24th to June 7th, 55.51 points) by 1.618 to obtain 89.82 points. 89.82 points from the orthodox high of the third Intermedi wave at 1011.96 gives a downside target of 922, which was hit last week (actu hourly low 920.62) on November 11th. This would suggest now a fifth Intermec back to new highs, completing the third Primary wave. The only problem I can with this interpretation is that Elliott suggests that fourth wave declines usually above the previous fourth wave decline of lesser degree, in this case 950.57 on February 17th, which of course has been broken on the downside. I have found however, that this rule is not steadfast. The reverse symmetrical triangle forma should be followed by a rally only approximating the width of the widest part of triangle. Such a rally would suggest 1020-1030 and fall far short of the trendlin target of 1090-1100. Also, *within* third waves, the first and fifth subwaves tend toward equality in time and magnitude. Since the first wave (Oct. 75-Dec.75) w 10% move in two months, this fifth should cover about 100 points (1020-1030) peak in January 1977, again short of the trendline mark.

Now uncover the rest of the chart to see how all these guidelines helped in asse the market's likely path.

Christopher Morley once said, "Dancing is a wonderful training for girls. It is the way they learn to guess what a man is going to do before he does it." In the sa way, the Wave Principle trains the analyst to discern what the market is likely t before it does it.

After you have acquired an Elliott "touch," it will be forever with you, just as a c who learns to ride a bicycle never forgets. At that point, catching a turn become fairly common experience and not really too difficult. Most important, in giving feeling of confidence as to where you are in the progress of the market, a know of Elliott can prepare you psychologically for the inevitable fluctuating nature of movement and free you from sharing the widely practiced analytical error of for projecting today's trends linearly into the future.

7.6 Practical Application

The Wave Principle is unparalleled in providing an overall perspective on the po of the market most of the time. Most important to individuals, portfolio manage and investment corporations is that the Wave Principle often indicates in advan relative *magnitude* of the next period of market progress or regress. Living in harmony with those trends can make the difference between success and failur financial affairs.

Despite the fact that many analysts do not treat it as such, the Wave Principle i all means an objective study, or as Collins put it, "a disciplined form of technica analysis." Bolton used to say that one of the hardest things he had to learn was believe what he saw. If the analyst does not believe what he sees, he is likely t read into his analysis what he thinks should be there for some other reason. At point, his count becomes subjective. Subjective analysis is dangerous and destr the value of any market approach.

What the Wave Principle provides is an objective means of assessing the relativ *probabilities* of possible future paths for the market. At any time, two or more v wave interpretations are usually acceptable by the *rules* of the Wave Principle. T rules are highly specific and keep the number of valid alternatives to a minimur Among the valid alternatives, the analyst will generally regard as preferred the interpretation that satisfies the largest number of guidelines, and so on. As a re competent analysts applying the rules and guidelines of the Wave Principle objectively should usually agree on the *order* of probabilities for various possibl outcomes at any particular time. That order can usually be stated with certainty no one assume, however, that certainty about the order of probabilities is the s as certainty about one specific outcome. Under only the rarest of circumstances the analyst ever *know exactly* what the market is going to do. One must unders and accept that even an approach that can identify high odds for a fairly specifi outcome will be wrong some of the time. Of course, such a result is a far better performance than any other approach to market forecasting provides.

Using Elliott, it is often possible to make money even when you are in error. Fo instance, after a minor low that you erroneously consider of major importance, may recognize *at a higher level* that the market is vulnerable again to new lows clear-cut *three*-wave rally following the minor low rather than the necessary fiv gives the signal, since a three-wave rally is the sign of an upward correction. Th what happens *after* the turning point often helps confirm or refute the assumed status of the low or high, well in advance of danger.

Even if the market allows no such graceful exit, the Wave Principle still offers exceptional value. Most other approaches to market analysis, whether fundame technical or cyclical, have no good way of forcing a change of opinion if you are wrong. The Wave Principle, in contrast, provides a built-in objective method for changing your mind. Since Elliott Wave analysis is based upon price patterns, a pattern identified as having been completed is either over or it isn't. If the mark changes direction, the analyst has caught the turn. If the market moves beyond what the apparently completed pattern allows, the conclusion is wrong, and any funds at risk can be reclaimed immediately. Investors using the Wave Principle prepare themselves psychologically for such outcomes through the continual updating of the *second best interpretation*, sometimes called the "alternate cou Because applying the Wave Principle is an exercise in probability, the ongoing

maintenance of alternative wave counts is an essential part of investing with it. the event that the market violates the expected scenario, the alternate count immediately becomes the investor's new preferred count. If you're thrown by y horse, it's useful to land right atop another.

Of course, there are often times when, despite a rigorous analysis, the questior arise as to how a developing move is to be counted, or perhaps classified as to degree. When there is no clearly preferred interpretation, the analyst must wait the count resolves itself, in other words, to "sweep it under the rug until the air clears," as Bolton suggested. Almost always, subsequent moves will clarify the of previous waves by revealing their position in the pattern of the next higher degree. When subsequent waves clarify the picture, the probability that a turnir point is at hand can suddenly and excitingly rise to nearly 100%.

7.7 Practical Application

The ability to *identify* junctures is remarkable enough, but the Wave Principle is only method of analysis which also provides guidelines for *forecasting*. Many of guidelines are specific and can occasionally yield results of stunning precision. I indeed markets are patterned, and if those patterns have a recognizable geome then regardless of the variations allowed, certain price and time relationships a likely to recur. In fact, real world experience shows that they do.

It is our practice to try to determine in advance where the next move will likely the market. One advantage of setting a target is that it gives a sort of backdrop against which to monitor the market's actual path. This way, you are alerted qu when something is wrong and can shift your interpretation to a more appropria one if the market does not do what is expected. If you then learn the reasons fo your mistakes, the market will be less likely to mislead you in the future.

Still, no matter what your convictions, it pays never to take your eye off what is happening in the wave structure in real time. Although prediction of target leve well in advance can be done surprisingly often, such predictions are not require order to make money in the stock market. Ultimately, the market is the messag and a change in behavior can dictate a change in outlook. All one really needs t know *at the time* is whether to be bullish, bearish or neutral, a decision that ca sometimes be made with a swift glance at a chart.

Of the many approaches to stock market analysis, the Elliott Wave Principle, in view, offers the best tool for identifying market turns as they are approached. I keep an hourly chart, the fifth of the fifth of the fifth in a primary trend alerts y within hours of a major change in direction by the market. It is a thrilling exper to pinpoint a turn, and the Wave Principle is the only approach that can occasio

provide the opportunity to do so. Elliott may not be the perfect formulation sinc
stock market is part of life and no formula can enclose it or express it complete
However, the Wave Principle is without a doubt the single most comprehensive
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approach to market analysis and, viewed in its proper light, delivers everything
promises.

8.2 Introducing Fibonacci

Although the world later almost lost sight of Fibonacci, he was unquestionably a of his time. His fame was such that Frederick II, a scientist and scholar in his ov right, sought him out by arranging a visit to Pisa. Frederick II was Emperor of t Holy Roman Empire, the King of Sicily and Jerusalem, scion of two of the nobles families in Europe and Sicily, and the most powerful prince of his day. His ideas those of an absolute monarch, and he surrounded himself with all the pomp of a Roman emperor.

The meeting between Fibonacci and Frederick II took place in 1225 A.D. and wa event of great importance to the town of Pisa. The Emperor rode at the head of long procession of trumpeters, courtiers, knights, officials and a menagerie of animals. Some of the problems the Emperor placed before the famous mathematician are detailed in *Liber Abacci*. Fibonacci apparently solved the pro posed by the Emperor and forever more was welcome at the King's Court. Whe Fibonacci revised *Liber Abacci* in 1228 A.D., he dedicated the revised edition to Frederick II.

It is almost an understatement to say that Leonardo Fibonacci was the greatest mathematician of the Middle Ages. In all, he wrote three major mathematical w the *Liber Abacci,* published in 1202 and revised in 1228, *Practica Geometriae*, published in 1220, and *Liber Quadratorum*. The admiring citizens of Pisa docum in 1240 A.D. that he was "a discreet and learned man," and very recently Josep Gies, a senior editor of the Encyclopedia Britannica, stated that future scholars time "give Leonard of Pisa his due as one of the world's great intellectual pione His works, after all these years, are only now being translated from Latin into English. For those interested, the book entitled *Leonard of Pisa and the New Mathematics of the Middle Ages*, by Joseph and Frances Gies, is an excellent tre on the age of Fibonacci and his works.

Although he was the greatest mathematician of medieval times, Fibonacci's onl monuments are a statue across the Arno River from the Leaning Tower and two streets which bear his name, one in Pisa and the other in Florence. It seems str that so few visitors to the 179-foot marble Tower of Pisa have ever heard of Fibonacci or seen his statue. Fibonacci was a contemporary of Bonanna, the arc of the Tower, who started building in 1174 A.D. Both men made contributions t world, but the one whose influence far exceeds the other's is almost unknown.

8.3 The Fibonacci Sequence

In *Liber Abacci*, a problem is posed that gives rise to the sequence of numbers 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, and so on to infinity, known today as the

Fibonacci sequence. The problem is this:

How many pairs of rabbits placed in an enclosed area can be produced in a sing year from one pair of rabbits if each pair gives birth to a new pair each month starting with the second month?

In arriving at the solution, we find that each pair, including the first pair, needs month's time to mature, but once in production, begets a new pair each month number of pairs is the same at the beginning of each of the first two months, so sequence is 1, 1. This first pair finally doubles its number during the second mo so that there are two pairs at the beginning of the third month. Of these, the ol pair begets a third pair the following month so that at the beginning of the four month, the sequence expands 1, 1, 2, 3. Of these three, the two older pairs reproduce, but not the youngest pair, so the number of rabbit pairs expands to The next month, three pairs reproduce so the sequence expands to 1, 1, 2, 3, 5 and so forth. Figure 3-1 shows the Rabbit Family Tree with the family growing v logarithmic acceleration. Continue the sequence for a few years and the numbe become astronomical. In 100 months, for instance, we would have to contend v 354,224,848,179,261,915,075 pairs of rabbits. The Fibonacci sequence resultin from the rabbit problem has many interesting properties and reflects an almost constant relationship among its components.

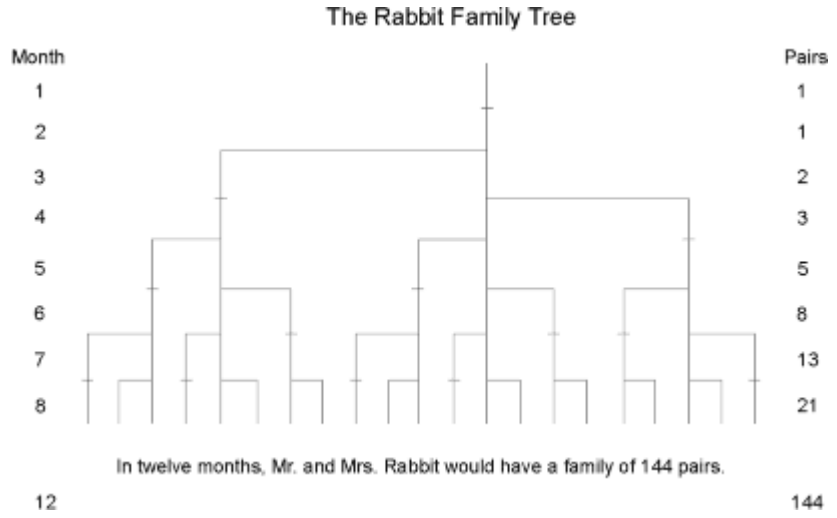


Figure 3-1

The sum of any two adjacent numbers in the sequence forms the next higher number in the sequence, viz., 1 plus 1 equals 2, 1 plus 2 equals 3, 2 plus 3 equ 3 plus 5 equals 8, and so on to infinity.

The Golden Ratio

After the first several numbers in the sequence, the ratio of any number to the higher is approximately .618 to 1 and to the next lower number approximately to 1. The further along the sequence, the closer the ratio approaches *phi* (deno

which is an irrational number, .618034.... Between alternate numbers in the sequence, the ratio is approximately .382, whose inverse is 2.618. Refer to Figu 2 for a ratio table interlocking all Fibonacci numbers from 1 to 144.

Fibonacci Ratio Table

DENOMINATOR \ NUMERATOR	1	2	3	5	8	13	21	34	55	89	144
1	1.00	2.00	3.00	5.00	8.00	13.00	21.00	34.00	55.00	89.00	144.00
2	.50	1.00	1.50	2.50	4.00	6.50	10.50	17.00	27.50	44.50	72.00
3	.333	.667	1.00	1.667	2.667	4.33	7.00	11.33	18.33	29.67	48.00
5	.20	.40	.60	1.00	1.60	2.60	4.20	6.80	11.00	17.80	28.80
8	.125	.25	.375	.625	1.00	1.625	2.625	4.25	6.875	11.125	18.00
13	.077	.154	.231	.385	.615	1.00	1.615	2.615	4.23	6.846	11.077
21	.0476	.0952	.1429	.238	.381	.619	1.00	1.619	2.619	4.238	6.857
34	.0294	.0588	.0882	.147	.235	.3824	.6176	1.00	1.618	2.618	4.235
55	.01818	.03636	.0545	.0909	.1455	.236	.3818	.618	1.00	1.618	2.618
89	.011236	.02247	.0337	.05618	.08989	.140	.236	.382	.618	1.00	1.618
144	.006944	.013889	.0208	.0347	.05556	.0903	.1458	.236	.382	.618	1.00

Toward perfect ratios

Figure 3-2

Phi is the only number that when added to 1 yields its inverse: .618 + 1 = 1 ÷ This alliance of the additive and the multiplicative produces the following seque equations:

$.618^2 = 1 - .618$,

$.618^3 = .618 - .618^2$,

$.618^4 = .618^2 - .618^3$,

$.618^5 = .618^3 - .618^4$, etc.

or alternatively,

$1.618^2 = 1 + 1.618$,

$1.618^3 = 1.618 + 1.618^2$,

$1.618^4 = 1.618^2 + 1.618^3$,

$1.618^5 = 1.618^3 + 1.618^4$, etc.

Some statements of the interrelated properties of these four main ratios can be listed as follows:

1) 1.618 - .618 = 1,

2) 1.618 x .618 = 1,

3) 1 - .618 = .382,

4) .618 x .618 = .382,

5) 2.618 - 1.618 = 1,

6) 2.618 x .382 = 1,

7) 2.618 x .618 = 1.618,

8) 1.618 x 1.618 = 2.618.

Besides 1 and 2, any Fibonacci number multiplied by four, when added to a sele
Fibonacci number, gives another Fibo-nacci number, so that:

3 x 4 = 12; + 1 = 13,

5 x 4 = 20; + 1 = 21,

8 x 4 = 32; + 2 = 34,

13 x 4 = 52; + 3 = 55,

21 x 4 = 84; + 5 = 89, and so on.

8.4 The Fibonacci Sequence

As the new sequence progresses, a third sequence begins in those numbers tha
added to the 4x multiple. This relationship is possible because the ratio betwee
second alternate Fibonacci numbers is 4.236, where .236 is both its inverse *and*
difference from the number 4. This continuous series-building property is reflec
other multiples for the same reasons.

1.618 (or .618) is known as the Golden Ratio or Golden Mean. Its proportions a
pleasing to the eye and an important phenomenon in music, art, architecture a
biology. William Hoffer, writing for the December 1975 *Smithsonian Magazine*,

*...the proportion of .618034 to 1 is the mathematical basis for the shape of play
cards and the Parthenon, sunflowers and snail shells, Greek vases and the spira
galaxies of outer space. The Greeks based much of their art and architecture up
this proportion. They called it "the golden mean."*

Fibonacci's abracadabric rabbits pop up in the most unexpected places. The nu
are unquestionably part of a mystical natural harmony that feels good, looks go
and even sounds good. Music, for example, is based on the 8-note octave. On t

piano this is represented by 8 white keys, 5 black ones — 13 in all. It is no acci that the musical harmony that seems to give the ear its greatest satisfaction is major sixth. The note E vibrates at a ratio of .62500 to the note C. A mere .006 away from the exact golden mean, the proportions of the major sixth set off go vibrations in the cochlea of the inner ear — an organ that just happens to be sh in a logarithmic spiral.

The continual occurrence of Fibonacci numbers and the golden spiral in nature explains precisely why the proportion of .618034 to 1 is so pleasing in art. Man see the image of life in art that is based on the golden mean.

Nature uses the Golden Ratio in its most intimate building blocks and in its mos advanced patterns, in forms as minuscule as atomic structure, microtubules in t brain and DNA molecules to those as large as planetary orbits and galaxies. It i involved in such diverse phenomena as quasi crystal arrangements, planetary distances and periods, reflections of light beams on glass, the brain and nervou system, musical arrangement, and the structures of plants and animals. Scienc rapidly demonstrating that there is indeed a basic proportional principle of natu the way, you are holding your mouse with your *five* appendages, all but one of have *three* jointed parts, *five* digits at the end, and *three* jointed sections to ea digit.

8.5 Fibonacci Geometry

The Golden Section

Any length can be divided in such a way that the ratio between the smaller part the larger part is equivalent to the ratio between the larger part and the whole Figure 3-3). That ratio is always .618.

Figure 3-3

The Golden Section occurs throughout nature. In fact, the human body is a tap of Golden Sections (see Figure 3-9) in everything from outer dimensions to faci arrangement. "Plato, in his *Timaeus*," says Peter Tompkins, "went so far as to consider *phi*, and the resulting Golden Section proportion, the most binding of a mathematical relations, and considered it the key to the physics of the cosmos. the sixteenth century, Johannes Kepler, in writing about the Golden, or "Divine Section," said that it described virtually all of creation and specifically symbolize God's creation of "like from like." Man is the divided at the navel into Fibonacci

proportions. The statistical average is approximately .618. The ratio holds true separately for men, and separately for women, a fine symbol of the creation of from like." Is all of mankind's progress also a creation of "like from like?"

The Golden Rectangle

The sides of a Golden Rectangle are in the proportion of 1.618 to 1. To construc Golden Rectangle, start with a square of 2 units by 2 units and draw a line from midpoint of one side of the square to one of the corners formed by the opposite as shown in Figure 3-4.

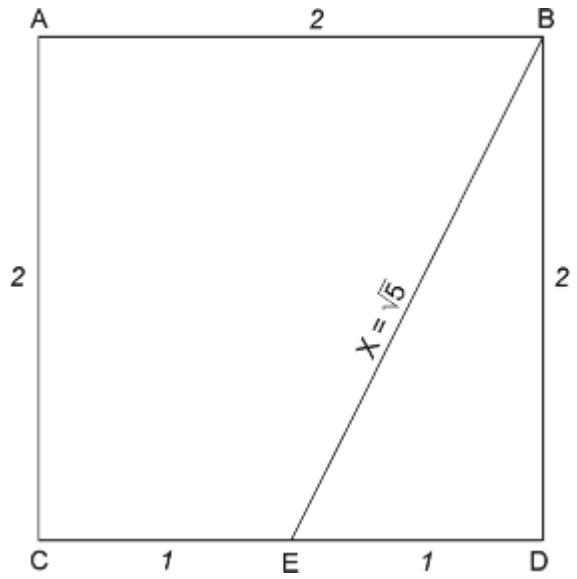


Figure 3-4

Triangle EDB is a right-angled triangle. Pythagoras, around 550 B.C., proved th square of the hypotenuse (X) of a right-angled triangle equals the sum of the squares of the other two sides. In this case, therefore, $X^2 = 2^2 + 1^2$, or $X^2 = 5$. length of the line EB, then, must be the square root of 5. The next step in the construction of a Golden Rectangle is to extend the line CD, making EG equal to square root of 5, or 2.236, units in length, as shown in Figure 3-5. When compl the sides of the rectangles are in the proportion of the Golden Ratio, so both th rectangle AFGC and BFGD are Golden Rectangles.

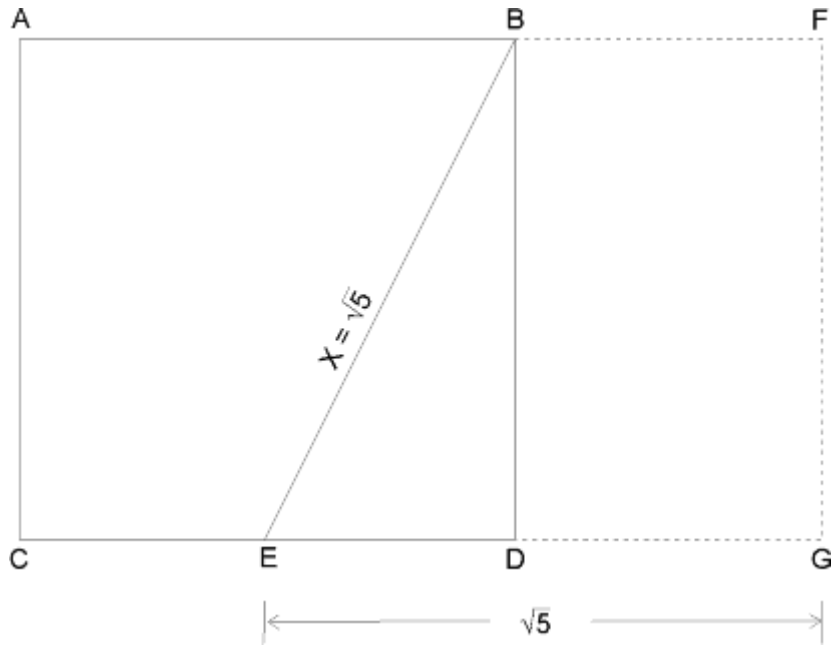


Figure 3-5

Since the sides of the rectangles are in the proportion of the Golden Ratio, then rectangles are, by definition, Golden Rectangles.

Works of art have been greatly enhanced with knowledge of the Golden Rectan Fascination with its value and use was particularly strong in ancient Egypt and Greece and during the Renaissance, all high points of civilization. Leonardo da V attributed great meaning to the Golden Ratio. He also found it pleasing in its proportions and said, "If a thing does not have the right look, it does not work." Many of his paintings had the right look because he used the Golden Section to enhance their appeal.

While it has been used consciously and deliberately by artists and architects for own reasons, the *phi* proportion apparently does have an effect upon the viewe forms. Experimenters have determined that people find the .618 proportion aesthetically pleasing. For instance, subjects have been asked to choose one rectangle from a group of different types of rectangles with the average choice generally found to be close to the Golden Rectangle shape. When asked to cros bar with another in a way they liked best, subjects generally used one to divide other into the *phi* proportion. Windows, picture frames, buildings, books and cemetery crosses often approximate Golden Rectangles.

As with the Golden Section, the value of the Golden Rectangle is hardly limited beauty, but serves function as well. Among numerous examples, the most strik that the double helix of DNA itself creates precise Golden Sections at regular intervals of its twists (see Figure 3-9).

While the Golden Section and the Golden Rectangle represent static forms of na and man-made aesthetic beauty and function, the representation of an aestheti

pleasing dynamism, an orderly progression of growth or progress, can be made by one of the most remarkable forms in the universe, the Golden Spiral.

5.4 The Guidelines of Alternation

The guidelines presented in Lessons 10-15 are discussed and illustrated in the context of a bull market. Except where specifically excluded, they apply equally in bear markets, in which context the illustrations and implications would be inverted.

Alternation

The guideline of alternation is very broad in its application and warns the analyst always to expect a difference in the next expression of a similar wave. Hamilton Bolton said,

The writer is *not* convinced that alternation is *inevitable* in types of waves in larger formations, but there are frequent enough cases to suggest that one should look for it rather than the contrary.

Although alternation does not say precisely what is going to happen, it gives valuable notice of what *not* to expect and is therefore useful to keep in mind when analyzing wave formations and assessing future possibilities. It primarily instructs the analyst not to assume, as most people tend to do, that because the last market cycle behaved in a certain manner, this one is sure to be the same. As "contrarians" never cease to point out, the day that most investors "catch on" to an apparent habit of the market is the day it will change to one completely different. However, Elliott went further in stating that, in fact, alternation was virtually a law of markets.

Alternation Within Impulses

If wave two of an impulse is a sharp correction, expect wave four to be a sideways correction, and vice versa. Figure 2-1 shows the most characteristic breakdowns of impulse waves, both up
and down, as suggested by the guideline of alternation. Sharp corrections never include a new price extreme, i.e., one that lies beyond the orthodox end of the preceding impulse wave. They are almost always zigzags (single, double or triple); occasionally they are double threes that *begin* with a zigzag. Sideways corrections include flats, triangles, and double and triple corrections. They usually include a new price extreme, i.e., one that lies beyond the orthodox end of the preceding impulse wave. In rare cases, a regular triangle (one that does not include a new price extreme) in the fourth wave position will take the place of a

sharp correction and alternate with another type of sideways pattern in the second wave position. The idea of alternation within impulses can be summarized by saying that one of the two corrective processes will contain a move back to or beyond the end of the preceding impulse, and the other will not.

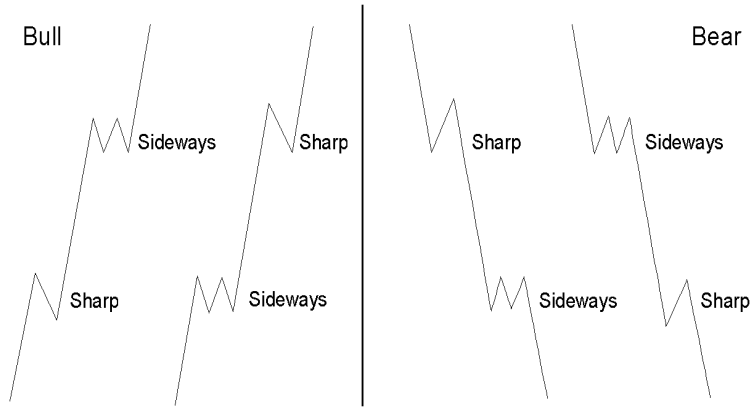


Figure 2-1

Diagonal triangles do not display alternation between subwaves 2 and 4. Typically they are both zigzags. Extensions are an expression of alternation, as the motive waves alternate their lengths. Typically the first is short, the third is extended, and the fifth is short again. Extensions, which normally occur in wave 3, sometimes occur in wave 1 or 5, another manifestation of alternation.

8.6 The Golden Spiral

Rectangle, as in Figure 3-5, can be divided into a square and a smaller Golden Rectangle, as shown in Figure 3-6. This process then theoretically can be continued to infinity. The resulting squares we have drawn, which appear to be whirling inward, are marked A, B, C, D, E, F and G.

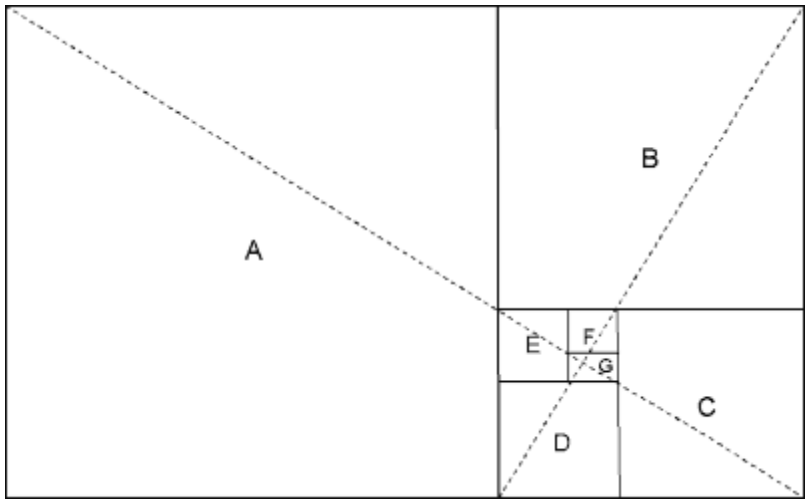


Figure 3-6

A Golden Rectangle can be used to construct a Golden Spiral. Any Golden

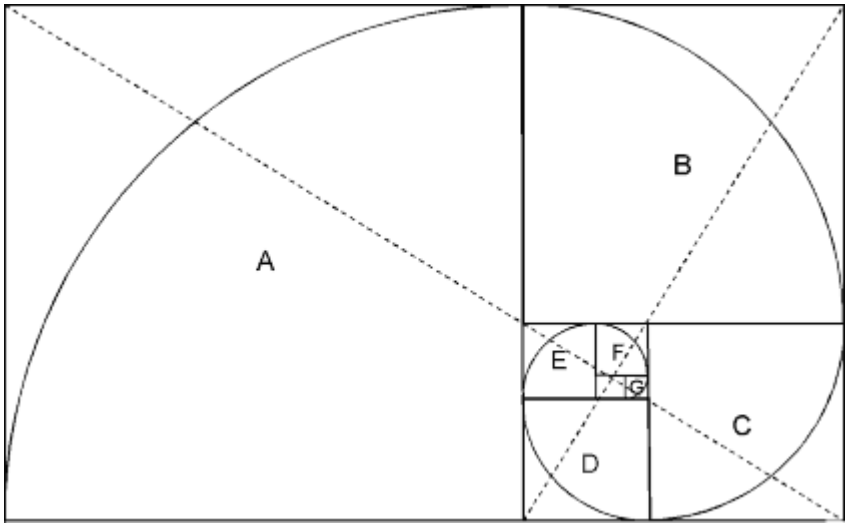
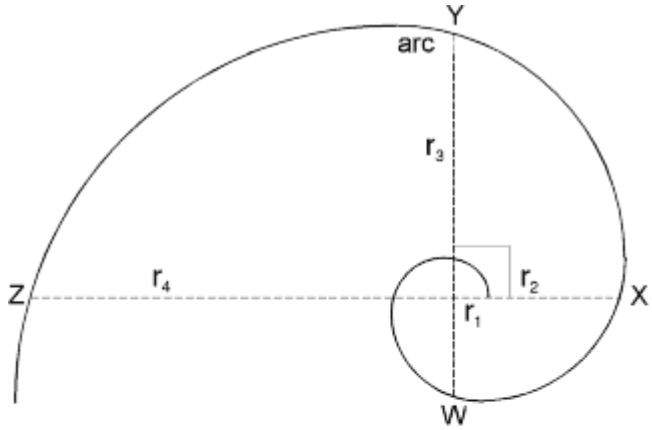


Figure 3-7

The dotted lines, which are themselves in golden proportion to each other, diagonally bisect the rectangles and pinpoint the theoretical center of the whirling squares. From near this central point, we can draw the spiral as shown in Figure 3-7 by connecting the points of intersection for each whirling square, in order of increasing size. As the squares whirl inward and outward, their connecting points trace out a Golden Spiral. The same process, but using a sequence of whirling triangles, also can be used to construct a Golden Spiral.

At any point in the evolution of the Golden Spiral, the ratio of the length of the arc to its diameter is 1.618. The diameter and radius, in turn, are related by 1.618 to the diameter and radius 90° away, as illustrated in Figure 3-8.



$$\frac{r_2}{r_1} = \frac{r_3}{r_2} = \frac{r_4}{r_3} = \ldots = \frac{r_n}{r_{n-1}} = \underline{1.618}$$

$$\frac{d_2}{d_1} = \frac{d_3}{d_2} = \ldots = \frac{d_n}{d_{n-1}} = \underline{1.618}$$

(where $d_1 = r_1 + r_3$, $d_2 = r_2 + r_4$, etc.)

$$\frac{\text{arcXY}}{\text{arcWX}} = \frac{\text{arcYZ}}{\text{arcXY}}, \text{ etc.} = \frac{\text{arcXZ}}{\text{arcWY}} = \underline{1.618}$$

$$\frac{\text{arcWY}}{\text{diam. (WY)}} = \frac{\text{arcXZ}}{\text{diam. (XZ)}}, \text{ etc.} = \underline{1.618}$$

Figure 3-8

8.7 The Golden Spiral

The Golden Spiral, which is a type of logarithmic or equiangular spiral, has no boundaries and is a constant shape. From any point on the spiral, one can travel infinitely in either the outward or inward direction. The center is never met, and the outward reach is unlimited. The core of a logarithmic spiral seen through a microscope would have the same look as its widest viewable reach from light years away. As David Bergamini, writing for *Mathematics* (in Time-Life Books' Science Library series) points out, the tail of a comet curves away from the sun in a logarithmic spiral. The epeira spider spins its web into a logarithmic spiral. Bacteria grow at an accelerating rate that can be plotted along a logarithmic spiral. Meteorites, when they rupture the surface of the Earth, cause depressions that correspond to a logarithmic spiral. Pine cones, sea horses, snail shells, mollusk shells, ocean waves, ferns, animal horns and the arrange- ment of seed curves on sunflowers and daisies all form logarithmic spirals. Hurricane clouds and the galaxies of outer space swirl in logarithmic spirals. Even the human finger, which is composed of three bones in Golden Section to one another, takes the spiral shape of the dying poinsettia leaf when curled. In Figure 3-9, we see a reflection of this cosmic influence in numerous forms. Eons of time and light years of

space separate the pine cone and the spiraling galaxy, but the design is the same: a 1.618 ratio, perhaps the primary law governing dynamic natural phenomena. Thus, the Golden Spiral spreads before us in symbolic form as one of nature's grand designs, the image of life in endless expansion and contraction, a static law governing a dynamic process, the within and the without sustained by the 1.618 ratio, the Golden Mean.

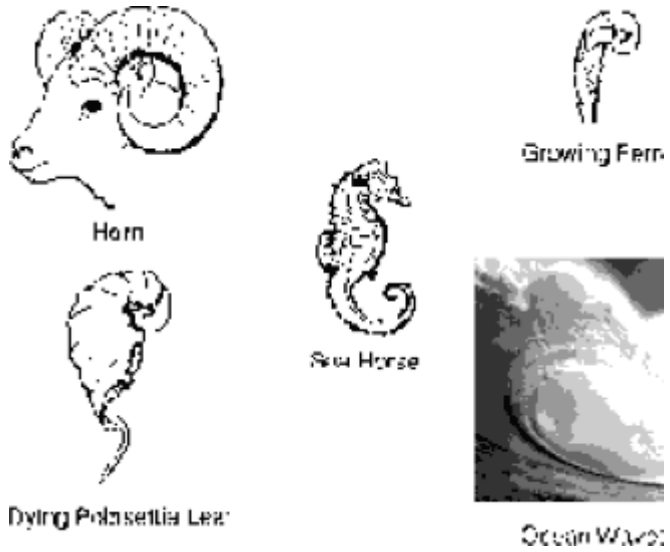


Figure 3-9a

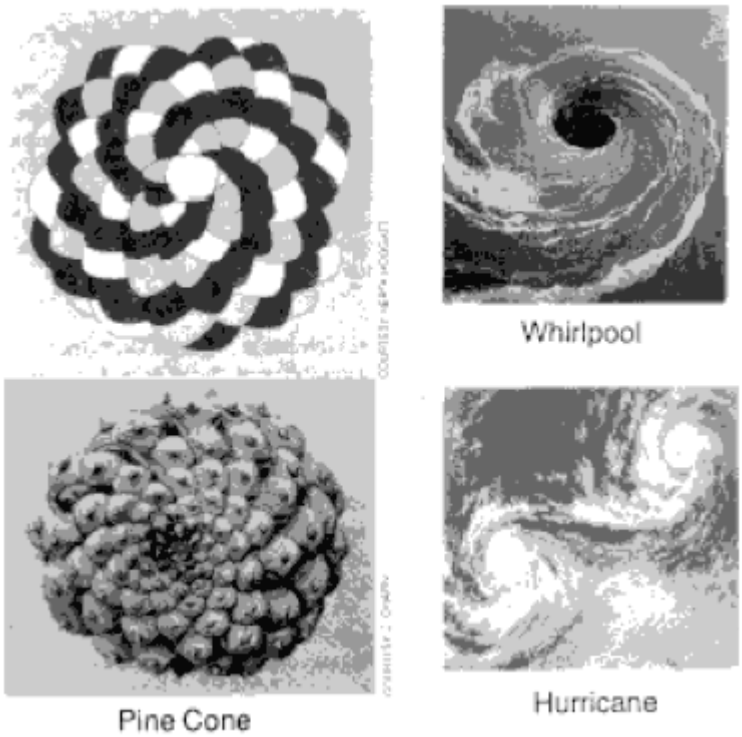
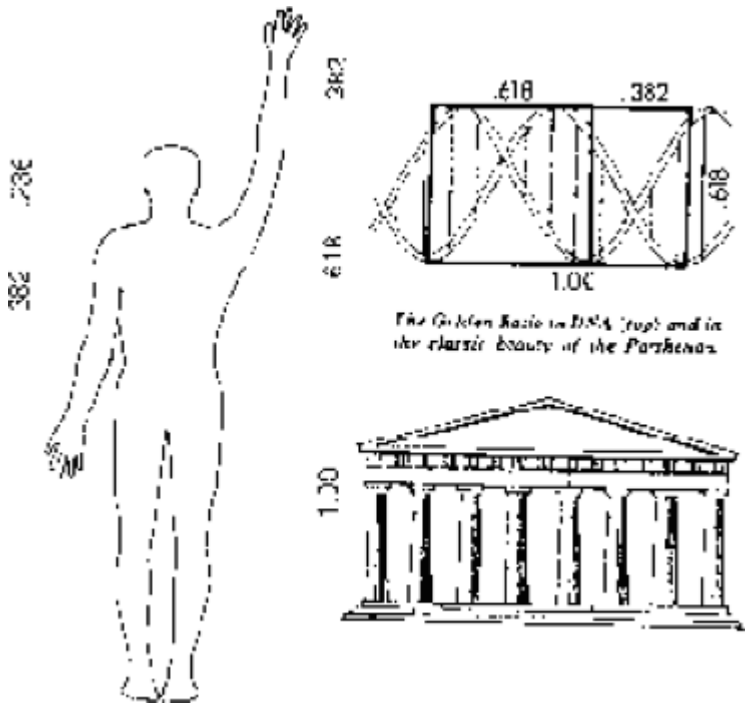


Figure 3-9b



The Golden Ratio in DNA (top) and in the classic beauty of the Parthenon.

Figure 3-9c

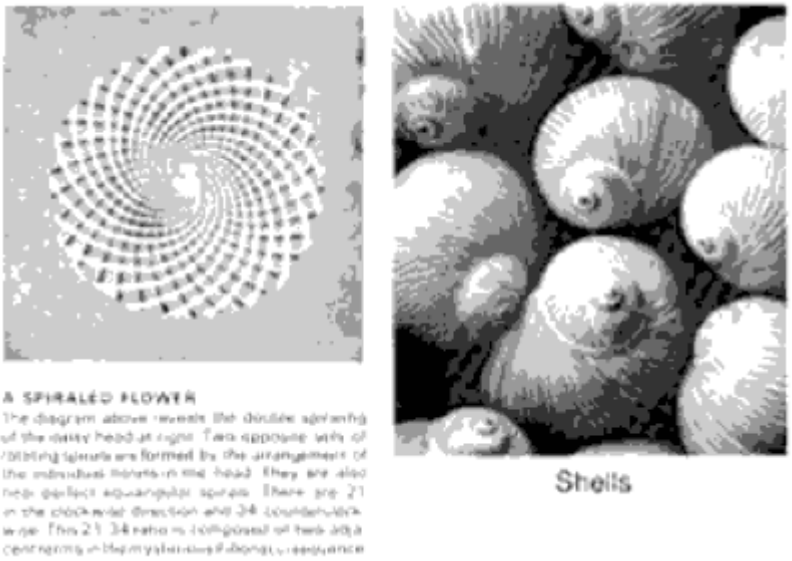
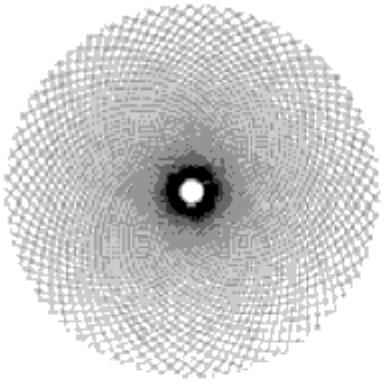
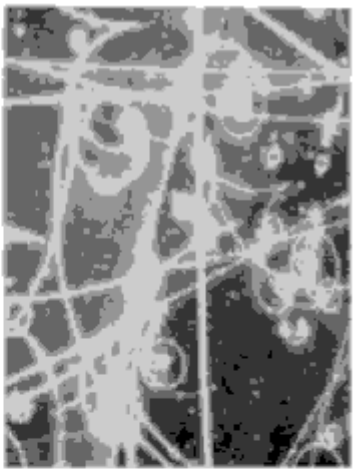


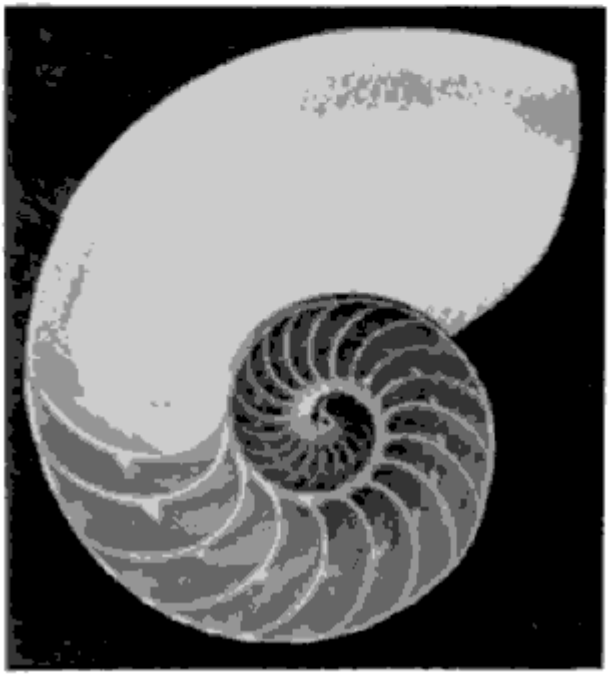
Figure 3-9d



Sunflower



Atomic Particles in
Bubble Chamber



Nautilus

Figure 3-9e

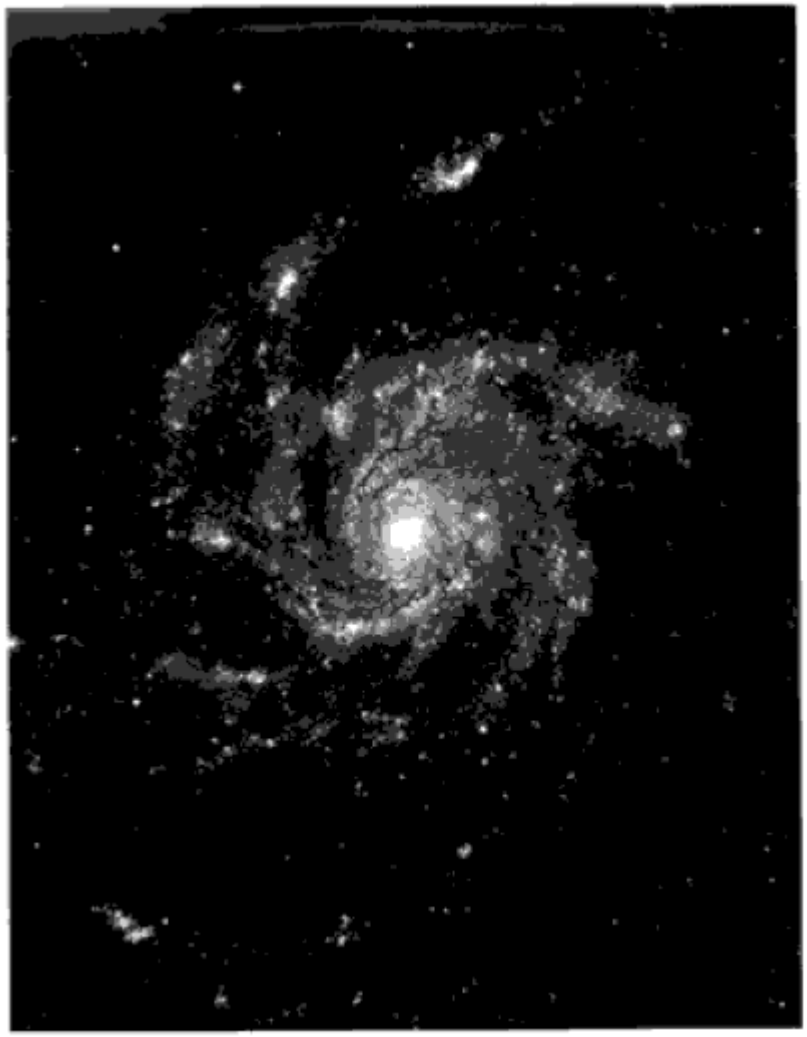


Figure 3-9f

9.1 The Meaning of Phi

The value of this ubiquitous phenomenon was deeply understood and profoundly appreciated by the greatest intellects of the ages. History abounds with examples of exceptionally learned men who held a special fascination for this mathematical formulation. Pythagoras chose the five-pointed star, in which every segment is in golden ratio to the next smaller segment, as the symbol of his Order; celebrated 17th century mathematician Jacob Bernoulli had the Golden Spiral etched into his headstone; Isaac Newton had the same spiral carved on the headboard of his bed (owned today by the Gravity Foundation, New Boston, NH). The earliest known aficionados were the architects of the Gizeh pyramid in Egypt, who recorded the knowledge of *phi* in its construction nearly 5000 years ago. Egyptian engineers consciously incorporated the Golden Ratio in the Great Pyramid by giving its faces a slope height equal to 1.618 times half its base, so that the vertical height of the pyramid is at

the same time the square root of 1.618 times half its base. According to Peter Tompkins, author of *Secrets of the Great Pyramid* (Harper & Row, 1971), "This relation shows Herodotus' report to be indeed correct, in that the square of the height of the pyramid is □□ x □□ = □, and the areas of the face 1 x □ = □." Furthermore, using these proportions, the Egyptian scientists (apparently in order to build a scale model of the Northern Hemisphere) used *pi* and *phi* in an approach so mathematically sophisticated that it accomplished the feat of squaring the circle and cubing the sphere (i.e., making them of equal area and volume), a feat which was not duplicated for well over four thousand years.

While the mere mention of the Great Pyramid may serve as an engraved invitation to skepticism (perhaps for good reason), keep in mind that its form reflects the same fascination held by pillars of Western scientific, mathematical, artistic and philosophic thought, including Plato, Pythagoras, Bernoulli, Kepler, DaVinci and Newton. Those who designed and built the pyramid were likewise demonstrably brilliant scientists, astronomers, mathematicians and engineers. Clearly they wanted to enshrine for millennia the Golden Ratio as something of transcendent importance. That such a caliber of people, who were later joined by some of the greatest minds of Greece and the Enlightenment in their fascination for this ratio, undertook this task is itself important. As for *why*, all we have is conjecture from a few authors. Yet that conjecture, however obtuse, curiously pertains to our own observations. It has been surmised that the Great Pyramid, for centuries after it was built, was used as a temple of initiation for those who proved themselves worthy of understanding the great universal secrets. Only those who could rise above the crude acceptance of things as they seemed to discover what, in actuality, they *were*, could be instructed in "the mysteries," i.e., the complex truths of eternal order and growth. Did such "mysteries" include *phi*? Tompkins explains, "The pharaonic Egyptians, says Schwaller de Lubicz, considered *phi* not as a number, but as a symbol of the creative function, or of reproduction in an endless series. To them it represented `the fire of life, the male action of sperm, the *logos* [referenced in] the gospel of St. John.'" *Logos*, a Greek word, was defined variously by Heraclitus and subsequent pagan, Jewish and Christian philosophers as meaning the rational order of the universe, an immanent natural law, a life-giving force hidden within things, the universal structural force governing and permeating the world.

9.2 Conceptual Phi

Consider when reading such deep yet vague descriptions that these people could not clearly *see* what they sensed. They did not have graphs and the Wave Principle to make nature's growth pattern manifest and were doing the best they could to describe an organizational principle that they discerned as shaping the natural world. If these ancient philosophers were right that a universal structural force governs and permeates the world, should it not govern and permeate the world of man? If forms throughout the universe, including man's body, brain and DNA, reflect the form of *phi*, might man's activities reflect it as well? If *phi* is the life-force in the universe, might it be the impulse behind the progress in man's productive capacity? If *phi* is a symbol of the creative function, might it govern the creative activity of man? If man's progress is based upon production and reproduction "in an endless series," is it not reasonable that such progress has the spiraling form of *phi*, and that this form is discernible in the movement of the valuation of his productive capacity, i.e., the stock market? Just as the initiated Egyptians learned the hidden truths of order and growth in the universe behind the apparent randomness and chaos (something that modern "chaos theory" has finally rediscovered in the 1980s), so the stock market, in our opinion, can be understood properly if it is taken for what it *is* rather than for what it crudely appears to be upon cursory consideration. The stock market is not a random, formless mess reacting to current news events but a remarkably precise recording of the formal structure of the progress of man.

Compare this concept with astronomer William Kingsland's words in *The Great Pyramid in Fact and in Theory* that Egyptian astronomy/astrology was a "profoundly esoteric science connected with the great cycles of man's evolution." The Wave Principle explains the great cycles of man's evolution and reveals how and why they unfold as they do. Moreover, it encompasses micro as well as macro scales, all of which are based upon a paradoxical principle of dynamism and variation within an unaltered form.

It is this form that gives structure and unity to the universe. Nothing in nature suggests that life is disorderly or formless. The word "universe" means "one order." If life has form, then we must not reject the probability that human progress, which is part of the reality of life, also has order and form. By extension, the stock market, which values man's productive enterprise, will have order and form as well. All technical approaches to understanding the stock market depend on the basic principle of order and form. Elliott's theory, however, goes beyond all others. It postulates that no matter how minute or how large the form, *the basic design remains constant.*

9.3 Phi and Elliott

Elliott, in his second monograph, used the title *Nature's Law — The Secret of the Universe* in preference to "The Wave Principle" and applied it to all sorts of human activity. Elliott may have gone too far in saying that the Wave Principle was *the* secret of the universe, as nature appears to have created numerous forms and processes, not just one simple design. Nevertheless, some of history's greatest scientists, mentioned earlier, would probably have agreed with Elliott's formulation. At minimum, it is credible to say that the Wave Principle is one of the most important secrets of the universe. Even this grandiose claim at first may appear to be only so much tall talk to practically-minded investors, and quite understandably so. The grand nature of the concept stretches the imagination and confounds the intellect, while its applicability is as yet unclear. First we must ask, can we both theorize and observe that there is indeed a principle that operates on the same mathematical basis in the heavens and earth as it does in the stock market?

The answer is yes. The stock market has the very same mathematical base as do these natural phenomena. The idealized Elliott concept of the progression of the stock market is an excellent base from which to construct the Golden Spiral, as Figure 3-10 illustrates with a rough approximation. In this construction, the top of each successive wave of higher degree is the touch point of the logarithmic expansion.

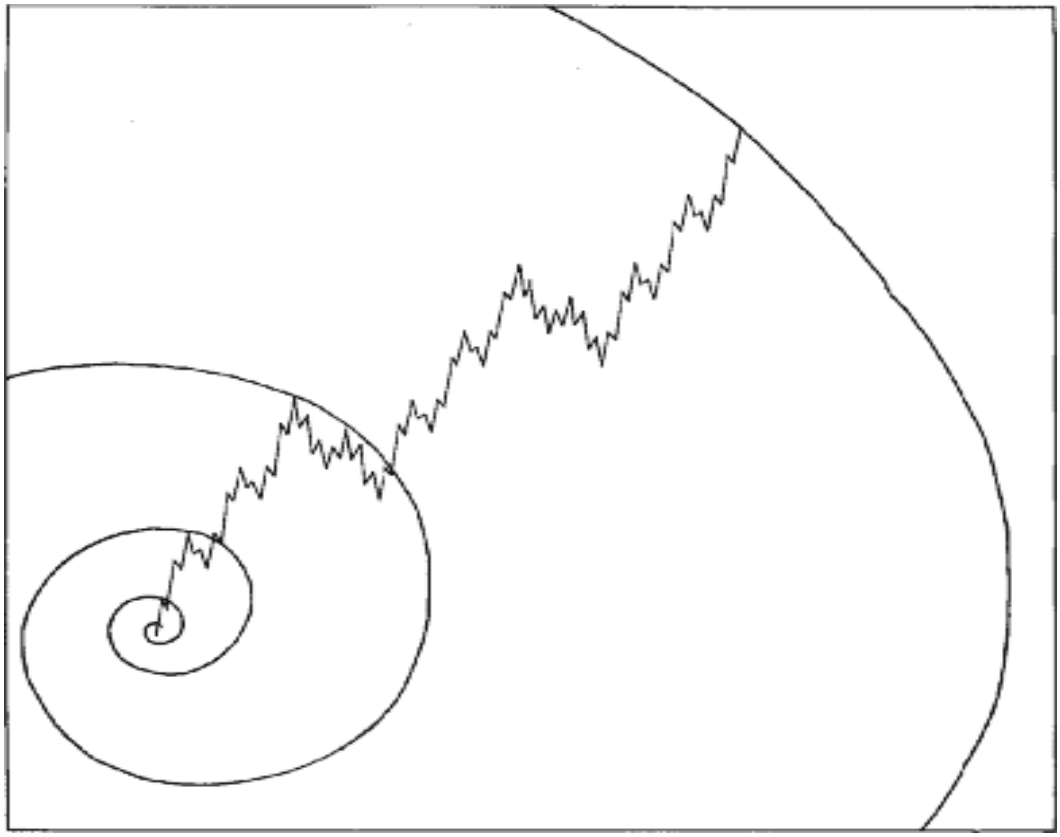


Figure 3-10

This result is possible because at every degree of stock market activity, a bull market subdivides into five waves and a bear market subdivides into three waves, giving us the 5-3 relationship that is the mathematical basis of the Elliott Wave Principle. We can generate the complete Fibonacci sequence, as we first did in Figure 1-4, by using Elliott's concept of the progression of the market. If we start with the simplest expression of the concept of a bear swing, we get one straight line decline. A bull swing, in its simplest form, is one straight line advance. A complete cycle is two lines. In the next degree of complexity, the corresponding numbers are 3, 5 and 8. As illustrated in Figure 3-11, this sequence can be taken to infinity.

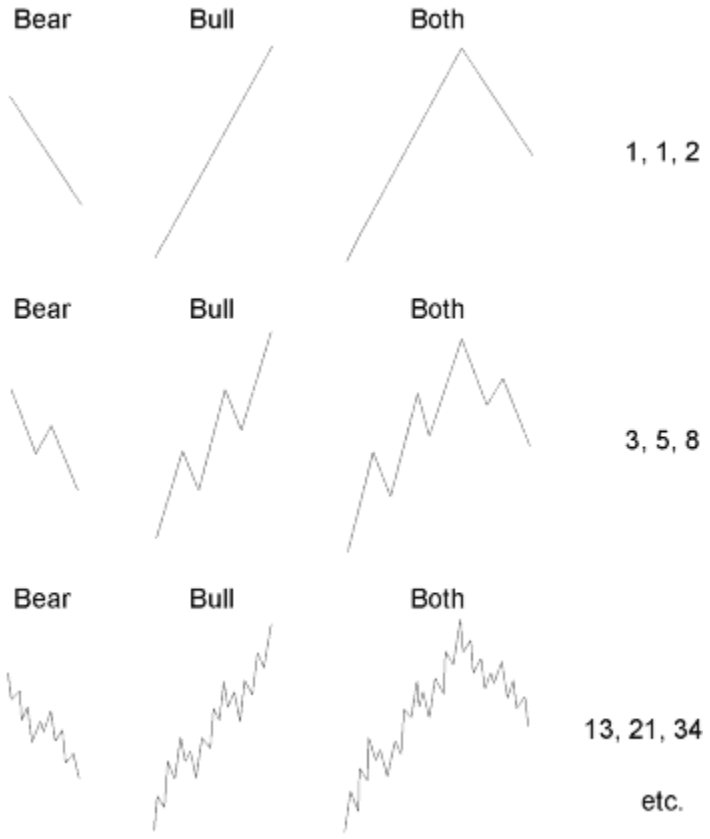
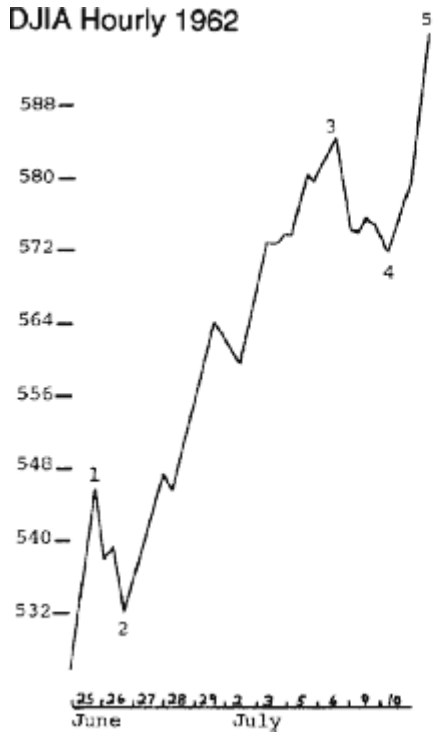


Figure 3-11

10.1 Phi And The Stock Market

The stock market's patterns are repetitive (and fractal, to use today's terminology) in that the same basic pattern of movement that shows up in minor waves, using hourly plots, shows up in Supercycles and Grand Supercycles, using yearly plots. Figures 3-12 and 3-13 show two charts, one reflecting the hourly fluctuations in the Dow over a ten day period from June 25th to July 10th, 1962 and the other a yearly plot of the S&P 500 Index from 1932 to 1978 (courtesy of *The Media General Financial Weekly*). Both plots indicate similar patterns of movement despite a difference in the time span of over 1500 to 1. The long term formulation is still unfolding, as wave V from the 1974 low has not run its full course, but to date the pattern is along lines parallel to the hourly chart. Why? Because in the stock market, form is not a slave to the time element. Under Elliott's rules, both short and long term plots reflect a 5-3 relationship that can be aligned with the form that reflects the properties of the Fibonacci sequence of numbers. This truth suggests that collectively, man's emotions, in their expression, are keyed to this mathematical law of nature.



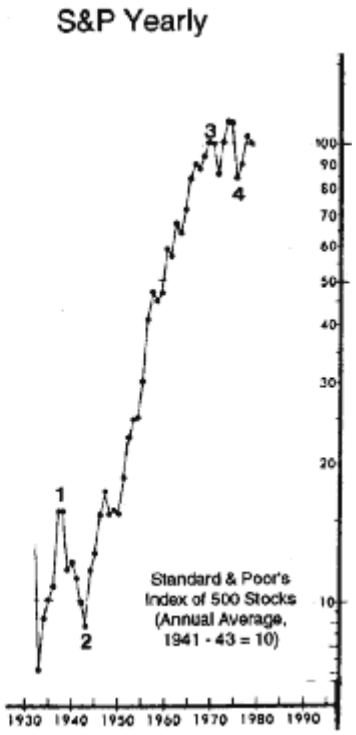


Figure 3-12 *Figure 3-13*

10.2 Phi And The Market

Now compare the formations shown in Figures 3-14 and 3-15. Each illustrates the natural law of the inwardly directed Golden Spiral and is governed by the Fibonacci ratio. Each wave relates to the previous wave by .618. In fact, the distances in terms of the Dow points themselves reflect Fibonacci mathematics. In Figure 3-14, showing the 1930-1942 sequence, the market swings cover approximately 260, 160, 100, 60, and 38 points respectively, closely resembling the declining list of Fibonacci ratios: 2.618, 1.618, 1.00, .618 and .382.

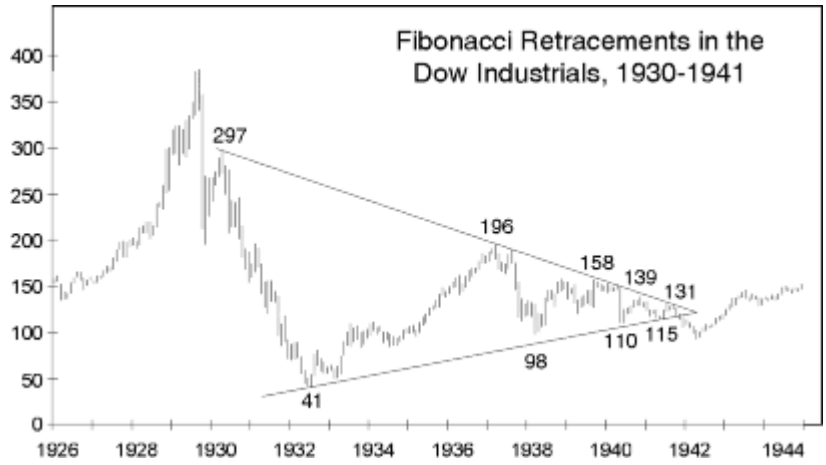


Figure 3-14

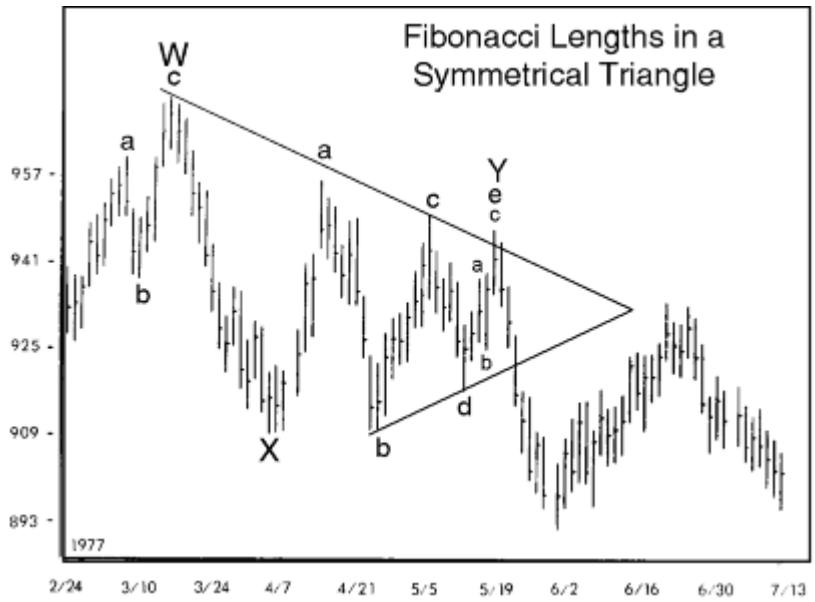


Figure 3-15

Starting with wave X in the 1977 upward correction shown in Figure 3-15, the swings are almost exactly 55 points (wave X), 34 points (waves A through C), 21 points (wave d), 13 points (wave a of e) and 8 points (wave b of e), the Fibonacci sequence itself. The total net gain from

beginning to end is 13 points, and the apex of the triangle lies exactly on the level of the correction's beginning at 930, which is also the level of the peak of the subsequent reflex rally in June. Whether one takes the actual number of points in the waves as coincidence or part of the design, one can be certain that the precision manifest in the constant .618 ratio between each successive wave is not coincidence. Lessons 20 through 25 and 30 will elaborate substantially on the appearance of the Fibonacci ratio in market patterns.

10.3 Phi and Additive Growth

As we will show in subsequent lessons, the spiral-like form of market action is repeatedly shown to be governed by the Golden Ratio, and even Fibonacci numbers appear in market statistics more often than mere chance would allow. However, it is crucial to understand that while the numbers themselves do have theoretic weight in the grand concept of the Wave Principle, it is the *ratio* that is the fundamental key to growth patterns of this type. Although it is rarely pointed out in the literature, the Fibonacci ratio results from this type of additive sequence no matter what two numbers start the sequence. The Fibonacci sequence is the basic additive sequence of its type since it begins with the number "1" (see Figure 3-17), which is the starting point of mathematical growth. However, we may also take any two *randomly selected numbers*, such as 17 and 352, and add them to produce a third, continuing in that manner to produce additional numbers. As this sequence progresses, the ratio between adjacent terms in the sequence always approaches the limit *phi* very quickly. This relationship becomes obvious by the time the eighth term is produced (see Figure 3-18). Thus, while the specific numbers making up the Fibonacci sequence reflect the ideal progression of waves in markets, the Fibonacci *ratio* is a fundamental law of geometric progression in which two preceding units are summed to create the next. That is why this ratio governs so many relationships in data series relating to natural phenomena of growth and decay, expansion and contraction, and advancement and retreat.

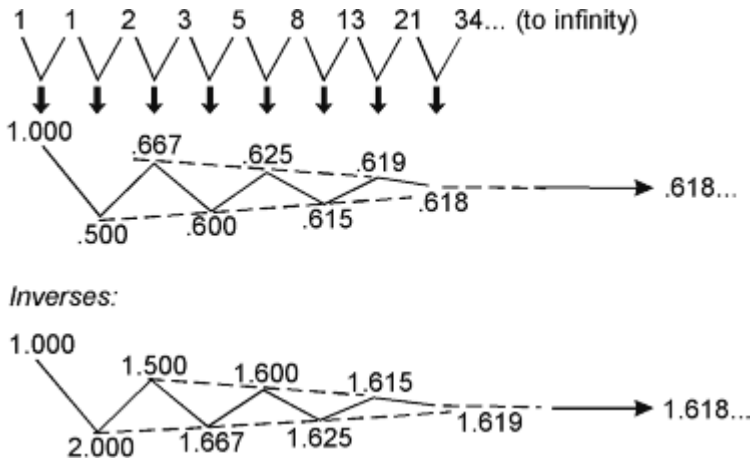


Figure 3-17

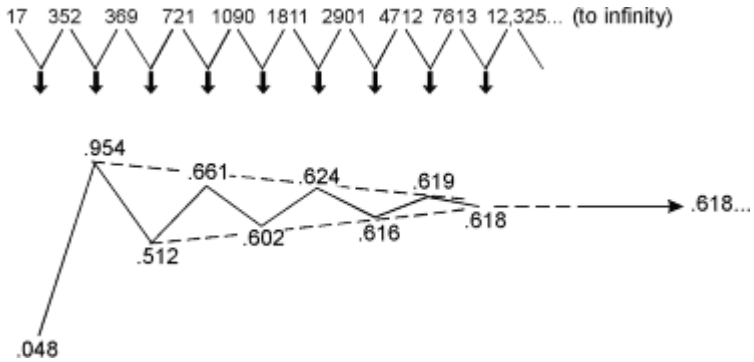


Figure 3-18

In its broadest sense, the Elliott Wave Principle proposes that the same law that shapes living creatures and galaxies is inherent in the spirit and activities of men *en masse*. The Elliott Wave Principle shows up clearly in the market because the stock market is the finest reflector of mass psychology in the world. It is a nearly perfect recording of man's social psychological states and trends, which produce the fluctuating valuation of his own productive enterprise, making manifest its very real patterns of progress and regress. What the Wave Principle says is that mankind's progress (of which the stock market is a popularly determined valuation) does not occur in a straight line, does not occur randomly, and does not occur cyclically. Rather, progress takes shape in a "three steps forward, two steps back" fashion, a form that nature prefers. In our opinion, the parallels between and Wave Principle and other natural phenomena are too great to be dismissed as just so much nonsense. On the balance of probabilities, we have come to the conclusion that there is a principle, everywhere present, giving shape to social affairs, and that Einstein knew what he was talking about when he said, "God does not play dice with the universe." The stock market is no exception, as mass behavior is undeniably linked to a law that can be studied and defined. The briefest way to express this principle is a simple mathematical

statement: the 1.618 ratio.

The *Desiderata,* by poet Max Ehrmann, reads, "You are a child of the Universe, no less than the trees and the stars; you have a right to be here. And whether or not it is clear to you, no doubt the Universe is unfolding as it should." Order in life? Yes. Order in the stock market? Apparently.

THE END

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