

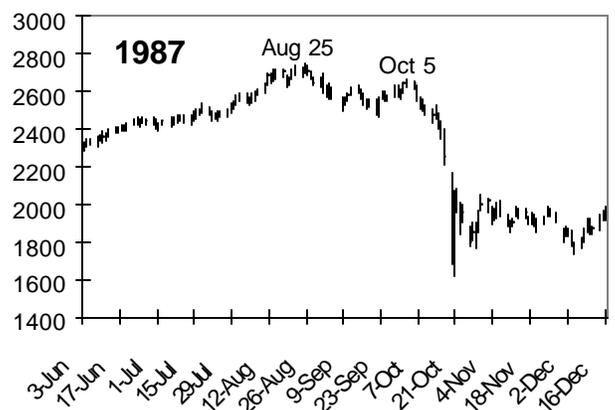
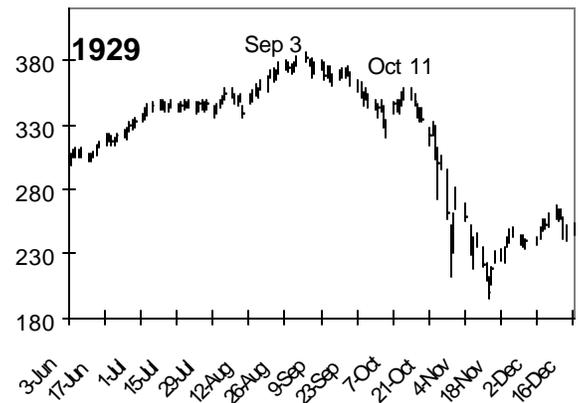
Explaining the 1987 Stock Market Crash and Potential Implications

by John Paul Koning

My goal in this paper is to provide you with a simple, non-technical explanation for the 1987 stock market crash. The crash occurred on Monday, October 19, 1987, and resulted in a fall of 22%, the biggest single one-day decline in Wall Street history. It was only two-and-a-half years later that markets were able to recover to pre-crash levels. In an environment in which -1.5 to 1.5% changes per day are the norm, 22% is a shocking number.

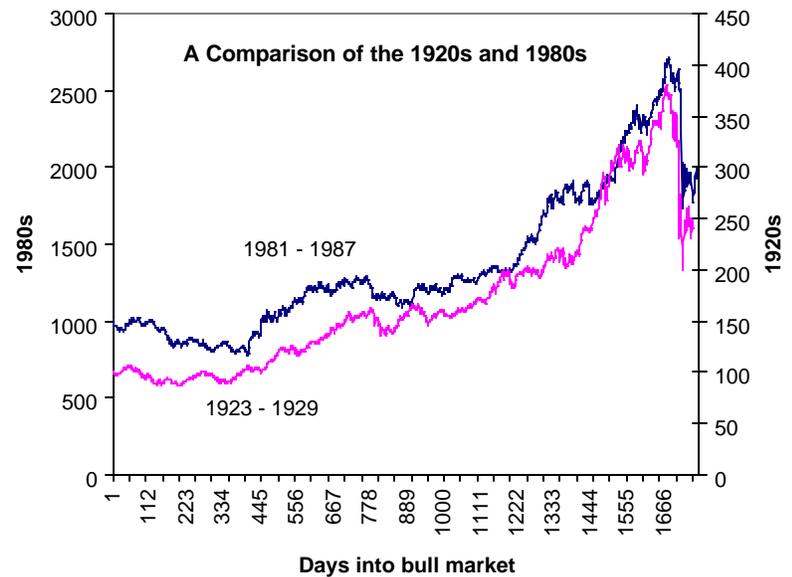
“What possible relevance could this have for me?” you ask. “The crash was years ago, all my savings are locked up in a retirement fund.” – or – “I don’t touch markets, I’m too young.” Whether you have an interest or not in markets, you may find this paper’s explanation for how and why the crash occurred relevant to your financial choices in the future, fears you may have of a great crash reoccurring in the coming years, what you learnt about the economy in school or university, and your own general understanding of the world. Indeed, its conclusions will contradict some of the ‘facts’ you have been told about markets.

In an age in which scientists have explained the inner workings of the human body, the movement of planets, and the composition of atoms, is it not unusual that an event so close to us, an event that wiped out some one trillion dollars of value in a single day, still lacks a satisfactory explanation? I know that I have always found our ignorance of the event surprising, and at times, it has made me uncomfortable. And the experts? Despite their efforts, economists have failed to determine what sparked the 22% decline that day. Indeed, it contradicts much of modern economic theory – using the probabilities generated by these theorists an event of 1987-like magnitude should only occur once every billion years or so. Two crashes have occurred in the last century. Surprisingly, this has not led people like you and me to doubt their theories; we keep on believing them because no one else has a good explanation. Those who were ‘in the know’ - traders, analysts, regulators, and journalists – have also been unable to provide a satisfactory explanation for the fall. Most of the reasons they have trotted out seem to be only scapegoats, whipping boys selected to calm the investing public’s fear. The crash stands like a black hole in 20th century history; unexplainable, fearsome, extraordinary. It smacks humanity in the face, forever reminding us of our failure to explain the very system in which we live.



Explaining the 1987 Stock Market Crash and Potential Implications

I treat 1987 as a puzzle, one that requires a different mode of problem solving than traditional economics and Wall Street analysis. Contrary to what you might believe, the crash's violence and distinctiveness do not render it a mystery. These features make it one of the few trading days over the last 50 years of market history for which we can claim to know the cause; the remaining majority are characterized by meandering trendlessness, and thus are far too complex for proper analysis. If you are willing to adopt this paper's methodology, the 1987 stock market crash becomes a relatively simple event to understand, while the rest of market history loses its explicability.



In order to answer our main problem, one must disentangle a preliminary riddle stemming from an unusual observation; the 1987 stock market crash bears an uncanny resemblance to the 1929 stock market crash. The riddle: Why do 1929 and 1987, separated by 58 years, resemble each other? This similarity will be most apparent to you not through words, but when one overlays a chart of 1929 over another of 1987. On the previous page I have enclosed two graphs of the Dow Jones Industrial Average, one from late 1929, the other late 1987. Note the similarity in shape created by the movement in price during the crash and prior to it. Also note the parallel in time frames when using a 365 day calendar as the point of reference – they each occurred in the September - October period.

Allow me to outline these similarities in words – have patience with me and use the chart as a guide. In the 1920s, markets enjoyed a long period of growth, reaching unprecedented heights by 1928 and 1929. As the chart above demonstrates, markets were very similar in the 1980s, a period of spectacular increases in share prices. Referring to the charts on page one, note that for the latter period, markets peaked on August 25, 1987. Looking back at 1929, we can see the Dow peaked on September 3, a temporal difference from 1987 of 8 days. Move forward on the charts. The second peak, which fell on October 5, only took the Dow partway back to the level of its first peak. The same scenario occurred in 1929, the second peak registering on October 11, a difference of 6 days. On the whole, both charts show a similar pattern of a peak, a trough, and a second peak lower than the first.

If you count the number of days between first and second peak they seem remarkably similar; 38 days had passed between first and second in 1929, and 40 in 1987. Both markets accelerated downwards from the second peak. The highest daily volume of shares in market history was recorded two days prior to the crash in 1929, and the day prior in 1987. Another parallel now strikes us. From the 1929 market top to the day prior to the crash, 55 days had passed. Taking the same measurement in 1987, 54 days had passed. Now our two last parallels, both on the day of the crash. 1929 and 1987 occurred on Mondays in late October and resulted in declines in excess of 20%, though the 1929 crash occurred over 2 days. Stepping back from it all, one can hardly ignore the conclusion that the two bear an uncanny resemblance.

Explaining the 1987 Stock Market Crash and Potential Implications

A few theorists have passed comment on this resemblance, but as far as I know no one has probed into why they are similar, or even bothered to pose the question in the first place. Those who have noted the parallel have been willing to take it as random chance, a peculiar alignment between two different markets that though interesting lacks all significance. Some claim the similarity of the two crashes demonstrates the universal and timeless aspects of human nature: we are always driven by the same fears and desires. I am not willing to brush off the similarity as mere coincidence or a convenient example of human foibles. This paper's theory is that prices in 1987 parallel prices in 1929 so closely because they were entirely influenced by 1929. The memory of 1929, its rises and falls, peaks and troughs, steadily reappeared in 1987, till Monday, October 19 when it suddenly achieved a massive enough influence on investors that it created 1987's 22% crash. Thus the striking parallel between the two. Our preliminary riddle concerning likeness now solved, we also have a potential explanation for the 1987 crash itself: 1987 was simply a replication of the 1929 crash.

Of course, this is all theory up till now, and may strike the reader as mystical and lacking any evidence whatsoever. Allow me to develop the process by which I hypothesize 1929 caused 1987. Because it is believed that new insights lead to profits, traders, analysts, and investors are forever searching for new ways to understand markets. These market participants draw on all sorts of information sources in order to fashion their understanding. The market's historical data record is one such source. Recorded market data in the form of price and volume extend far back into the 1800s, providing an electronic history of sorts that can be mined by participants. When I say that the memory of 1929 had an influence on 1987, it is not through some mystical unconsciousness, but through this electronic data record, a massive store of prices that forever contains the market's movements. Traders can turn to this data record, and like historians, pull up old patterns to get what are believed to be insights into the present and the future.

In 1987, traders were looking for any sort of insight into the roaring bull market of the day. A few traders with access to the Dow's history turned to the 1920s bull market for an 'analog', a guide by which to understand their own bull market. These traders noticed the same uncanny parallels between 1929 and 1987 that I mentioned earlier - peaks were starting to align with each other and time frames demonstrating remarkable similarity. Emboldened by the strong alignment, belief in the analog model grew among these original 'analog-aware' participants. Anticipating a 1929-like crash, they subsequently chose to place sell orders using the analog as their justification. Their trading had the ironic effect of influencing market price to conform ever more with their model, for a decision to sell, no matter how small, always pressures the markets downward. Through the process of noting similarities between 1929 and 1987 and acting on them, traders were unwittingly forcing 1987 to mimic 1929. As prices were created by analog-style trading that fulfilled the analog's prediction, belief in the parallel grew ever greater among initial observers. At the same time, as the market fell the comparison between the two eras became ever more apparent to the wider investing community. The scenario culminated on Monday, October 19, when a critical mass of people became aware of the parallel and caused the 1987 Dow to fully replicate the 1929 Dow.

The theory explained, what does reality have to say? Were certain traders following such a strategy around the time of the crash? The following interviews were given by two major participants in 1987 markets, Paul Tudor-Jones and Stanley Druckenmiller. Tudor-Jones was a spectacularly successful trader who ran the Tudor Futures Fund. In September 1987, his fund registered a dramatic 62% return. Druckenmiller managed George Soros's Quantum Fund and sold stocks the morning of the crash. Soros is perhaps the most well known speculator alive today. These accounts prove that analog-type strategizing was being used by participants to buy

Explaining the 1987 Stock Market Crash and Potential Implications

and sell in 1987. Such real-world examples move the theory beyond mere figment of the imagination towards reality.

Interview with Paul Tudor Jones

Q: You did extraordinarily well during October 1987, a month which was a disaster for many other traders. Could you fill in some of the details?

Tudor-Jones: The week of the crash was one of the most exciting periods of my life. We had been expecting a major stock market collapse since mid-1986 and had contingency plans drawn up because of the possibility we foresaw for a financial meltdown. When we came in on Monday, October 19, we knew that the market was going to crash that day.

Q: What made you so sure?

Tudor-Jones: Because the previous Friday was a record volume day on the downside. The exact same thing happened in 1929, two day before the crash. Our analog model to 1929 had the collapse perfectly nailed. [Paul Jones' analog model, developed by his research director, Peter Borish, super imposed the 1980s market over the 1920s market. The two markets demonstrated a remarkable degree of correlation. This model was a key tool in Jones' stock index trading during 1987]. Treasury Secretary Baker's weekend statement that the US would no longer support the dollar because of its disagreements with West Germany was the kiss of death for the markets.

Interview with Stanley Druckenmiller:

Druckenmiller (describing the Friday before the 1987 crash): That Friday after the close, I happened to speak to Soros. He said that he had a study done by Paul Tudor Jones that he wanted to show me. I went over to his office, and he pulled out this analysis that Paul had done about a month or two earlier. The study demonstrated the historical tendency for the stock market to accelerate on the downside whenever an upward-sloping parabolic curve had been broken – as had recently occurred. The analysis also illustrated the extremely close correlation in the price action between the 1987 stock market and the 1929 stock market, with the implicit conclusion that we were now at the brink of a collapse. I was sick to my stomach when I went home that evening. I realized that I had blown it and that the market was about to crash.

On the morning of October 19, 1987, the Wall Street Journal published a chart of stock prices in 1987 superimposed on stock prices leading up to the crash of 1929. "Market watchers have been fascinated for some time by a striking similarity between stocks' surge this decade and their path 58 years ago," read the caption. This same sort of analog was used by Tudor-Jones and Druckenmiller.

I have also found examples of the analog among small time traders and newsletter writers. Al Larson, long time editor of the investment newsletter *Cash in on Chaos*, mentions that he became aware of the analog when his new laser printer accidentally overlaid two charts – the XMI from 1987 and the Dow in 1929. Amazed, he alerted several people on August 16th to what he saw as the imminent crash in markets. In the January 1987 issue of the Atlantic Monthly, popular economist John Kenneth Galbraith summarized the parallels he saw between 1929 and 1987. Though his analog model was more of a verbal comparison than a visual overlay, the readership of the Atlantic is large and may have used the article to justify selling. In his book *Irrational Exuberance*, economist Robert Shiller mentions the existence of another parallel:

Explaining the 1987 Stock Market Crash and Potential Implications

“Five days before the 1987 stock market crash, the MacNeil/Lehrer NewsHour featured Ravi Batra, author of *The Great Depression of 1990: Why Its Got to Happen, How to Protect Yourself*. This book took as its basic premise a theory that history tends to repeat itself in exact detail, so that the 1929 crash and subsequent depression had to repeat themselves ... it had been on the *New York Times* best-seller list for fifteen weeks by the time of the crash. On the NewsHour, Batra confidently predicted the stock market crash in 1989 would “spread to the whole world”; after it, he declared, “there will be a depression.” Batra’s statements, made as they were on a highly respected show, may – even though they predicted a crash two years hence – have contributed in some small measure to an atmosphere of vulnerability that brought us the crash of 1987. Although Batra’s appearance on the NewsHour just before the crash might be considered a coincidence, one must keep in mind that predictions of market crashes are actually quite rare on national news shows. The proximity of his appearance the actual crash is at the very least highly suggestive.

These examples illustrate that actual participants were well aware of the similarities between 1929 and 1987. Their realization was not sudden, and my placement of the order of quotations emphasizes this. Some, like Tudor-Jones, picked out the parallel remarkably early, while others like Druckenmiller and Soros came later in the game. The Wall Street Journal noted the similarity the weekend of the crash. Bringing up the rear was the Journal reader who only learnt of the parallel 8:30 AM at breakfast on Black Monday. Some of the analogs – the Wall Street Journal, Ravi in NewsHour, and Galbraith in the Atlantic – were carried in the mass media and had potential audiences numbering in the millions. I use the above as exemplars of participants using 1929 to model 1987. They were not the cause of the crash, but represent a larger population of people who, through their actions, helped bring about its fulfillment.

The analog’s success in capturing the belief of investors stemmed from its ability to create the market along the way, and its success in creating the market from its ability to capture belief. This is what is called a reflexive relationship, a scenario in which two sides continuously reinforce each other and create a rapidly expanding system. By the morning of Monday, October 19th, I hypothesize that the actual analog had long since done its damage; upon its 9:30 opening New York was already down some 8% from Friday. Participants who were unaware of the analog, they were the majority that morning, didn’t need the precise overlay of 1987 prices on 1929 to inspire the memory of the Great Crash. As they watched prices plummet, the ‘idea of crash’ dominated their beliefs, emotions, and thoughts that day to the exclusion of all else. Much of the content of this ‘idea of crash’ would have been rooted in stories about 1929 they’d heard from grandparents of millionaires selling apples on streets, or the lessons from history class of Wall Street brokers hurling themselves from windows. These memories, imprecise and hazy, hovering somewhere on the edge of their consciousness, were triggered by the first waves of analog-inspired selling, and bred the mass hysteria that took the financial markets for their 22% ride. A precise memory embodied in the analog created falling prices, which triggered vague memories to come to the forefront that finished off what had been started. We have arrived at an unusual conclusion. A belief that 1987 resembled 1929 actually became the cause by which 1929 resembled 1987.

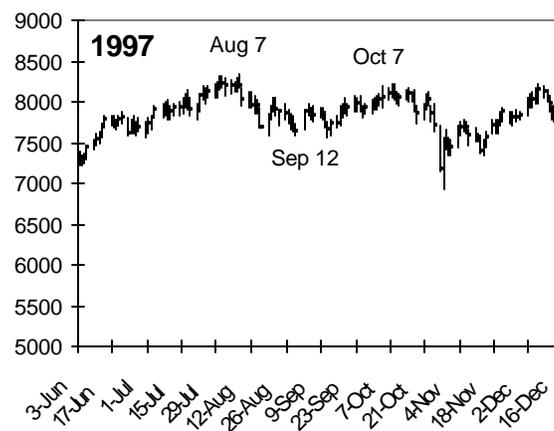
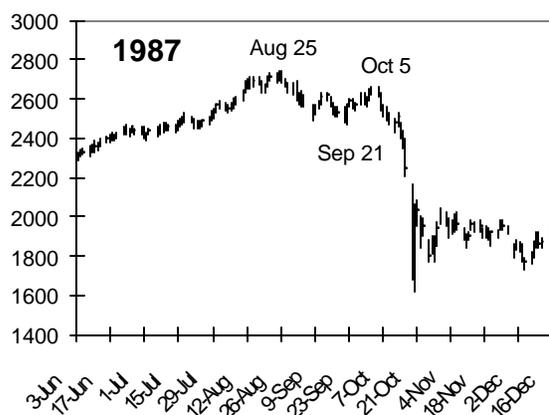
In his *Treatise on Human Nature* David Hume’s wrote “...nor is it reasonable to conclude, merely because one event, in one instance, precedes another, that therefore the one is the cause, the other the effect. Their conjunction may be arbitrary & casual. [A person] immediately infers the existence of one object from the appearance of the other. Yet he has not, by all his experience, acquired any idea or knowledge of the secret power by which the one object produces the other.” I bring in Hume not to confuse or give a semblance of intellectuality, but because his *Treatise* makes important observations on the principle of cause-and-effect, the very same principle market participants unconsciously use when they attempt to understand and trade markets. Price changes are naturally assumed to have causes, and new events are expected to cause price changes. Hume’s quote maintains that it is not possible to conclude that the occurrence of one

Explaining the 1987 Stock Market Crash and Potential Implications

event at a certain time and the subsequent reaction to that event are actually linked by any sort of power, nor that the same event will result in the same reaction in the future. Despite the error one might make in assuming constant cause and effect relationships and the ability to comprehend the 'secret power' that connects them, Hume writes later in the *Treatise* that a person is driven to make these causal connections in their mind since survival requires action, and action requires decision. Applying Hume, we might say that participants in 1987 were willing to make the questionable connection to 1929 because it gave them a leg up in the competitive markets, contributing in some small way to their survival as investors or traders. Analog models and cause-and-effect relations are necessary to market participants, not because they make sense, but they because they allow for action. What Hume doesn't note is that though these mental connections between cause and effect may be faulty, unprovable guesses, in certain social environments such as markets these faulty mental connections exercise a tangible influence on future events in the physical world. The 1929-87 analog, for instance, was a strange causal belief that garnered enough force that it actually manifested itself in the reality it was trying to understand, creating the very event it forecasted. Though cause-and-effect is simply a guess, an imperfect science, participant's strong belief in utilizing cause-and-effect analysis in markets actually results in cause-and-effect relationships appearing. It seems that market prices, created by our belief-inspired choices to buy or sell, are shot through with the sort of faulty causal reasoning that Hume described in the *Treatise*. These faulty prices, a function of our mistaken reasoning, become a new source of information for even more faulty reasoning.

There are some interesting points to be derived from the above conclusions. First, if no one had noticed the parallels between the two time frames, the belief that linked them would not have emerged, the analog would have gone unsaid, and markets would never have crashed in 1987. Second, if 1929 had not occurred, 1987 would never have taken place because a precedent of 22% declines would not have been set, and parallels impossible to make. Third, if 1929 had different features, say it occurred in April and not October, then 1987 would have occurred in April as well. If 1929 had resulted in a 15% fall and not 22%, then 1987 would have only fallen by only 15%. And finally, if the same array of news items that characterized markets in October 1987 reappeared in April 2003, markets would not crash, though if the reappearance occurred in October the likelihood would be much greater. These distinctions are important because they locate the cause of the 1987 crash in the human mind, not the physical world.

On October 27, 1997 the Dow Jones Industrials plunged 7.2%. Again, reasons seemed lacking. Given the similarity between 1997 and 1987 (see charts below), it is possible that the 1929-87 analog resurfaced in 1997. Granted, the similarities were not near as obvious as those in the 1929-87 example. The market peaks in the charts lack the close alignment that characterized 1929-87 and the crash ended in a decline of only 7.2% as opposed to 22%. Still, the similarities between



Explaining the 1987 Stock Market Crash and Potential Implications

the three - all late October crashes occurring on Monday - are too uncanny to be dismissed as mere chance. Concrete examples of a 1987-1997 analog can be found circulating in newspapers and the trading strategies of market participants at the time, reinforcing the likelihood of the theory that 1929 caused 1987 which caused 1997. I attach a list of the 1997 analog models I have found in the appendix.

Why did 1997 fail to correspond as closely to 1987 as 1987 did to 1929? The circuit breakers installed on the New York exchange after 1987 were triggered several times in 1997, calming the market. It is also possible that the memory no longer had the following that it did in 1987 and therefore the feedback effect was not as strong. Also, another memory may have eclipsed the 1987 analog - the memory of the 1987 recovery. Markets recovered 5% the day after the 1987 crash and 10% the next, both very impressive gains. Furthermore, Oct 19-20 1987 was a terminal low for the markets and set the stage for a very impressive rise through 1988 and 1989, recovering all the loss inflicted by the crash. If enough people had such post-crash memories they would have started to buy near the end of Monday, Oct 27, 1997 resulting in a truncated crash. Another belief rooted in the market's consciousness was the mantra of the era - buy the dips in the Dow. The efficacy of this memory had been confirmed so many times since 1987 that the mantra may have overwhelmed the power of the analog.

Now step backwards in time to October 1989. On Friday the 13th, the Dow fell 6.9%, a movement attributed by most to the news prior to the crash: the stalling of a United Airlines leveraged buyout deal. According to an article by Robert Shiller in the New York times, *Fear of a Crash Caused the Crash*, the best possible explanation for the decline was that October 13 happened to be the two year anniversary of the 1987 crash. Proof of 1987 creating 1989 is not as strong as the two others I have mentioned - the 1929-87 and 1987-1997 analogs - because the actual 1987-1989 price movements did not move in lockstep. The 1989 crash occurred on a Friday, not a Monday. It emerged suddenly after markets had hit new record highs, whereas 1929, 1987, and 1997 all occurred several months after a high had been set. I have also been unable to find examples of analogs in the press or being advocated by traders at the time. Nevertheless, Shiller's observations give credence to the overall hypothesis that memory effects of crashes might create movements like 1987 and 1997.

Having explained how 1929 affected 1987, how might the crash have affected the world? Politically, the event was a bombshell. Ronald Reagan was forced to accept Democratic Congress's calls for a reduced budget because his lavish spending had been blamed for the crash. Because many observers have chosen to attribute the crash to high government spending, this crash-reinforced stigma may have helped influence the fiscal discipline of the 1990s. In terms of regulation, the New York Stock Exchange chose to implement circuit breakers on the exchange in order to limit future crashes. In both these cases, a mental model, the analog, created a crash, which in turn had its affect on the larger political and economic system.

There are more effects. After 1987, option prices yielded by the Black and Scholes theorem ceased to have their precise link to actual option prices. Into the 1990s, puts with strike prices well below the current market price were relatively more expensive than puts with higher strike prices, a skew developing where none previously existed. In other words, participants no longer expected markets to behave under the assumption of log normality, a theory emerging from modern economics that prices confined themselves to rational price changes. Instead, fearing a repetition of 1987, the options trading community now put more value on instruments expected to do well in the event of large declines. Program trading, a popular investing strategy at the time which used futures to hedge stock declines, took a lion's share of the blame for the crash and forever faded from the investment community. In economics, a new school of thought emerged in

Explaining the 1987 Stock Market Crash and Potential Implications

Santa Fe in reaction to the existing paradigm's inability to explain the crash. Tens of thousands of people working in the financial industry across the globe lost their jobs as management tried to cope with the effects of the 22% fall. Companies announced stock buy backs. These buy backs influenced the internal structure of firms, their balance sheets, income statements etc, in other words, their fundamentals. Eventually such changes would have filtered through to employees, suppliers, and customers. Many individuals interviewed in newspaper articles that week stated that they would be cutting down on their spending. All these examples demonstrate the ability of an abstract causal theory, a mental model, to create a major event that affected the physical world and the individuals in it in a very tangible way.

When observers came back to explain the 1987 crash, they tried to do so using traditional analysis which looks for physical causes and analyzes their effects. Using this style of analysis, they came up empty because they never dug deeper into the event for its mental origin. Unconventional means of analysis that focus on beliefs and psychology allow for non-standard theories, especially one that links 1987 to 1929, and 1997 to 1987. If you are willing to believe my analysis, how might this affect your world? First, this paper maintains that changes in financial markets are a result of our mental concept of things. What does this mean? Tuning into CNN or CNBC at night, we are constantly deluged with analysis that links changes in financial markets with actual news and events, not what I call our mental concepts. This sort of cause and effect analysis associates markets with the physical world, providing us with a simple and comforting explanation for market movements. "An upturn in new job creations pushed the Dow up 100 points today," says Lou Dobbs, and we accept this sort of analysis as valid. If the 1987 crash was created by the 1929 market, then this idea of an objective physical world of events causing changes in markets is false. That markets could latch on a mental concept of 1929 as rational for market action in 1987 reveals incongruities none of us would expect, and more importantly, emphasizes the distinction between what is actually moving markets and what authorities such as economists, analysts, and anchors on CNBC are telling you moves markets. I claim that the greatest ever decline in market history was a function of our beliefs, a subjective movement created entirely by our mind's need to search for causes and effects. No tangible facts went into it, no events, no external causes. Abstracting from this, I claim it is possible that every market move is a function of the mind, the result of causes none other than the vagaries of our thoughts and beliefs. What makes 1987 not only special but analyzable is its singular devotion to one mental concept, a memory of the 1929 crash, whereas most market moves are governed by multiple concepts which tend to cancel each other out, rendering it impossible to pin down any one cause.

Much of the rational CNBC hosts use to interpret markets is rooted in traditional economics. This sort of thinking pervades governments, the media, education, and business. Economists believe in an economic paradigm that stems from Newtonian physics. In this paradigm, each physical occurrence has an equal effect in the economy. Once introduced into the economic system, an event quickly has its effect, and the system moves back to equilibrium. A new cause occurs, has its effect, and a new equilibrium is reached. This is called a linear system because old causes are not remembered – once they have occurred, their effect is forever annulled. If the 1987 crash was created by 1929, an event 58 years prior to it, than the assumption of linearity inherent in the current economic paradigm is rendered suspect, in turn the very system it posits questioned. It is important to understand that this traditional mode of thought has been used to rationalize topics relevant to all of us: globalization, market competition and efficiency, exchange and trade, and the spread of capitalism. To question rational economic theory using 1987 forces us to reconsider the arguments underpinning such issues, our knowledge of markets, and our conception of the world. 1987 is just one example of many new emerging contradictions to economic theory. Still taught in universities and accepted as fact the world over, it stands ever closer to being toppled, the straw that breaks the camels back only a matter of time.

Explaining the 1987 Stock Market Crash and Potential Implications

Expansion

The explanation for 1987 implies that markets are mentally created, not physically created. The interaction of many different changing values and belief systems result in decisions to buy or sell, and these create a market price. These beliefs can be based on memories and analogs, such as the 1929-87 parallel, feelings, what other people have said, or one's own analysis. During the course of a normal day, competing beliefs tend to cancel each other out so that extreme movements in the direction implied by one belief do not occur. In other words, because enough participants trade on the belief that markets should rise, they cancel out the handful of participants who believe that markets should crash, therefore a crash will not occur. When everyone believes a crash will occur, then one will. Over periods of time in which prices move sideways in a non trending manner, it is because an equal number of positive beliefs and negative beliefs based on a given situation are being used by market participants. Only rarely does one belief dominate all others. When a certain set of beliefs outweighs the others, or a particular configuration of them corresponds and confirms the others in a meaningful manner, the buying or selling power associated with that belief will outweigh the others and markets will move in the direction implied by those beliefs. One might say that they start to self-fulfill themselves. This is how trends emerge. When beliefs successfully create prices, these beliefs earn a greater number of believers, and price in the next period is created evermore in the direction that the original belief implied. In most circumstances, the isolation of a particular belief or idea that caused a trend is impossible because prices are pushed and pulled by many at once. Extreme price movements like 1987 and 1997 occur when only a few beliefs drive investor choice, therefore these beliefs have the power and influence to best self-fulfill themselves since there is little competition from other beliefs. It is because of their relative simplicity that price movements like crashes open themselves up to analysis.

The above explanation regarding beliefs corresponds with many of the ideas concerning complexity emerging from the Santa Fe Institute. From the Institute's perspective, traditional economics is correct in so far as it admits it is only one of the many systems of belief used by individuals to guide the actions and decisions that go into creating markets. Market participants, or agents, derive simple trading rules through observations that are discarded or carried over depending on their success. These rules may involve 'glances to the past', perhaps something akin to the 1929-87 analog, and when used by enough agents at the same time, result in self-fulfilling movements.

Am I relegating news, events, and notions of cause and effect to the backstage and bringing psychology to the forefront? Not at all. When events occur in the outside world, it is commonly assumed they automatically affect markets. Thus a rise in interest rates is assumed to automatically have some sort of affect on stocks, a terrorist attack an immediate affect on markets, or a government announcement concerning jobs a sudden affect on prices. This sort of reasoning is wrong. Events never affect markets, they affect our mental models, our thoughts and beliefs. Our actions then flow from our new view of things, creating prices that *seem* to react to events. Prices are not created directly by the event, but are mediated by our mind's perception of that event. Thus a terrorist attack does not result in a falling stock market. Instead our perceptions and beliefs about the attack, when acted on, result in a falling market. We create the decline, not the attack. Events only affect markets indirectly through the medium of the mind. If the mind chooses to ignore an event, no matter how earth shattering that event may be, it will never have an effect on price.

Explaining the 1987 Stock Market Crash and Potential Implications

The 1929-87 analog was a simple belief that created itself, in the process 'becoming true'. The event, emerging from a theory, went on to influence the world in a very tangible manner, affecting politics, regulators, thinkers, businesses, and many others not directly linked to financial markets. And these affects have not stopped over time. In the always changing system of beliefs that form markets, the analog has enjoyed a relatively long lifespan and considerable influence, the use of it never ending after the 1987 crash. Come October, articles warning of the month's inherent instability have become a staple of newspapers the world over. The smile in options markets continues to exist, most participants unaware that its roots are based in the 1987 crash. The analog has been built-in to the system, creating fear only because it has done so in the past.

If it is correct to posit a 'changing system of beliefs' that creates markets, not only is the 1929-1987 analog a member of this system, the theory expounded in this paper is also a part of the same system, a belief about cause and effect with the potential to create the markets. This is not remarkable – any analyst who has ever written a recommendation on a stock or economist who has voiced a theory has contributed to the market's belief system. Like the original analog, this paper's success will be measured by its ability to affect markets. More specifically, this paper's success will be measured by its ability to reveal what it believes to be the underlying logic behind the 1987 crash and the analog that caused it. By joining the population of beliefs circulating the market, the same population in which the analog circulates, it should draw people's belief from the analog to itself, dispelling the market's fixation with the analog forever. The next time conditions are ripe for an October decline, sellers will be able to turn to an argument that exposes the analog, bringing them over to the buying side and counter-balancing any potential selloffs. In other words, investors should no longer fear the threat of October crashes because they have a belief system that reveals why such crashes occurred in the past, and why their future occurrence may no longer be necessary. This is predicated on people accepting and believing this paper, a long shot at best. Future market fluctuations will test its validity, almost like an ongoing experiment.

Acceptance of this paper's statements can come from two sides. First, it may seem that it provides the best theoretical explanation for the 1987 crash to date, therefore it deserves belief. I by no means maintain what I have written is true, I follow Hume in believing that connections of cause and effect are driven by psychological necessity, often wrong and spurious. Somewhere between the root cause and the crash itself, something has happened. The best explanation for what has occurred in this 'in-between point', and there have been many, will never be right, only better than the other explanations. This paper's causal explanation for 1987 may very well be the best of many imperfect explanations that have been put forth to date, though in the end it is up to society to adopt the most 'correct-sounding' one. Alternatively, one may doubt the theoretical side of the paper, but choose to adopt it because of its use-value. Using such pragmatic or morale rationale one realizes that 1987, 1997, and October fear are socially undesirable events - adoption of this paper's statements, regardless of their ultimate truth, by enough participants will help prevent future October paranoia. This is the idea of collective belief; everybody cooperatively believing in the same theory resulting in it realizing itself.

The idea of testing this paper's conclusions in the real world leads to the larger idea of social and scientific theory. The scientific method proves hypotheses by repetitively testing them in laboratory conditions, conclusions being that which cannot be falsified. This paper, for instance, took a stab in that direction. It started by working towards a conclusion concerning the cause of the crash using the scientific method - hypothesis, proof, theory - bringing in as many incidents as possible to support its statements. The method works in the natural world because no matter how many times a scientist tells an atom its periodic number or a planet its orbit, the atom will not change nor will the planet wobble. In other words, because its object of inquiry is non-

Explaining the 1987 Stock Market Crash and Potential Implications

thinking, science can be objective. This allows for controlled tests that can be constantly replicated by different scientists, always resulting in the same result. When attempting to understand social systems though, the theories of the social scientist, researcher, or analyst are read by the very subjects they are modeled on, the implication being that these subjects modify themselves in the direction of the theory. Take the 1929-87 analog, a good example as any of a social theory. The analog was seized upon by a large number of market participants and used by them as justification for action. It wasn't so much that the theory was correct in its comparison of the two eras. Rather, it was useful in mobilizing opinion and creating market action, so useful in fact that it self-fulfilled itself. Abstracting from this example, general social theories, whether they be academic or not, are observed by people, believed by them, and ultimately affect the world via these people's actions. When theories such as the analog seem to correctly analyze the world, it cannot be disproved that the opposite occurred: the world has chosen to model its actions off these theories resulting in their realization. This compromises the "objective" application of the scientific method to social systems like the markets. After all, if a scientist were to tell an atom to hop, and it did, the scientist's objectivity would evaporate. On the other hand, if a social scientist tells a subject how to act in regards to making market decisions, they very well may adopt his theory and perform it.

This departure of social theory from scientific objectivity is not its weakness, but its strength. In the end, social theories should not be judged only on truth, i.e. their ability to objectively analyze a system a la science, but also how they interact with existing theories and beliefs. In other words, social theories are valid in so far as they demonstrate the ability to create the world. Good social theories will be introduced into the system of beliefs and either be rejected or accepted, in the end being tested not in a closed laboratory, but the laboratory of humanity. A theory could be said to be right if people adopt it into their mental models. An old knock against social theorists like economists has it that unlike scientists, economists have had no laboratory in which to evaluate theories, they can only try to explain past events and predict future ones. This paper maintains it is possible to think of economic theories as more than predictors of future events, but also as means to create those events. The laboratory in which theory is tested is not an office or a high tech research centre filled with gadgets, but reality as it emerges from the point of a theory's introduction and onward. This method, a social method, departs from the scientific method because it measures itself by its ability to affect the outside world as opposed to objective experimentation and prediction of that same world. The 1929-87 analog, a theory, would be called an effective theory, for it (almost perfectly) realized itself in the markets. Has neo-classical economics ever created reality so effectively? The exercise of this paper endeavours to carry out one such social experiment. It is conscious of its dual nature as a claim to analyze reality while simultaneously functioning as a useful belief by which to shape the perceptions and actions of market participants come future Octobers.

Books and sources that have helped the author:

- Brian Arthur** and his work on complexity in economics
- George Soros**, *The Alchemy of Finance*, 1994
- Robert Shiller**, *Irrational Exuberance*, 2000 and other works
- Jack Schwager**, *Market Wizards*, 1989
- Donald Mackenzie and Yuval Millo**, *Constructing a Market Performing Theory: The Historical Sociology of a Financial Derivatives Exchange*, 2001
- Peter Borish**
- Richard Shabacker**, *Technical Analysis and Stock Market Profits*, 1937
- David Hume**, *A Treatise on Human Nature*, 1739

Explaining the 1987 Stock Market Crash and Potential Implications

Examples of the 1987-1997 analog, all on the internet

<http://www.lowrisk.com/crash/87vs97.htm>
<http://www.lib.uwo.ca/business/crash87.html>
<http://www.washingtonpost.com/wp-srv/business/longterm/blackm/blackm.htm>
<http://www.webspace4me.net/~blhill/pages.aux/astroecon/hans.crash97/crash97.html>
<http://www.fool.com/Features/1997/sp971017CrashAnniversarySkyIsFalling.htm>
http://www.pbs.org/newshour/bb/economy/july-dec97/crash_10-17.html
<http://www.ncpa.org/pd/economy/pdeco/oct97jj.html>
<http://www.bis.org/review/r971030c.pdf>
<http://www.spiritoftruth.org/8000d.htm>
<http://www.agoraoutlook.com/october%2097.htm>
<http://www.frbsf.org/econsrch/wklyltr/el97-32.html>
<http://www.geocities.com/Athens/Academy/1223/rf14-87crash.html>
<http://www.gsm.ucdavis.edu/Innovator/fall1997/crash.html>
<http://www.scoop.co.nz/stories/HL9909/S00227.htm>

These are, respectively...

a personal website focusing on markets
University of Western Ontario Library website
Washington Post
Astro-economics letter writer
Motley Fool
PBS NewsHour
National Center for Policy Analysis
Bank of International Settlements
An eclectic website
Agora Outlook, a trading program
The Federal Reserve Bank of San Francisco
The Rankin File, personal page of an economist
Conference on 1987 hosted by the University of California, Davis
Scoop Headlines, New Zealand news site

Other analogs on the internet

1999

http://www.gmsresearch.com/Countdown_Crash.htm
http://www.gold-eagle.com/editorials_99/dfisher072699.html
<http://www.formstar.nis.za/sp500cc.htm>

2001

http://news.bbc.co.uk/2/hi/programmes/working_lunch/1617969.stm