

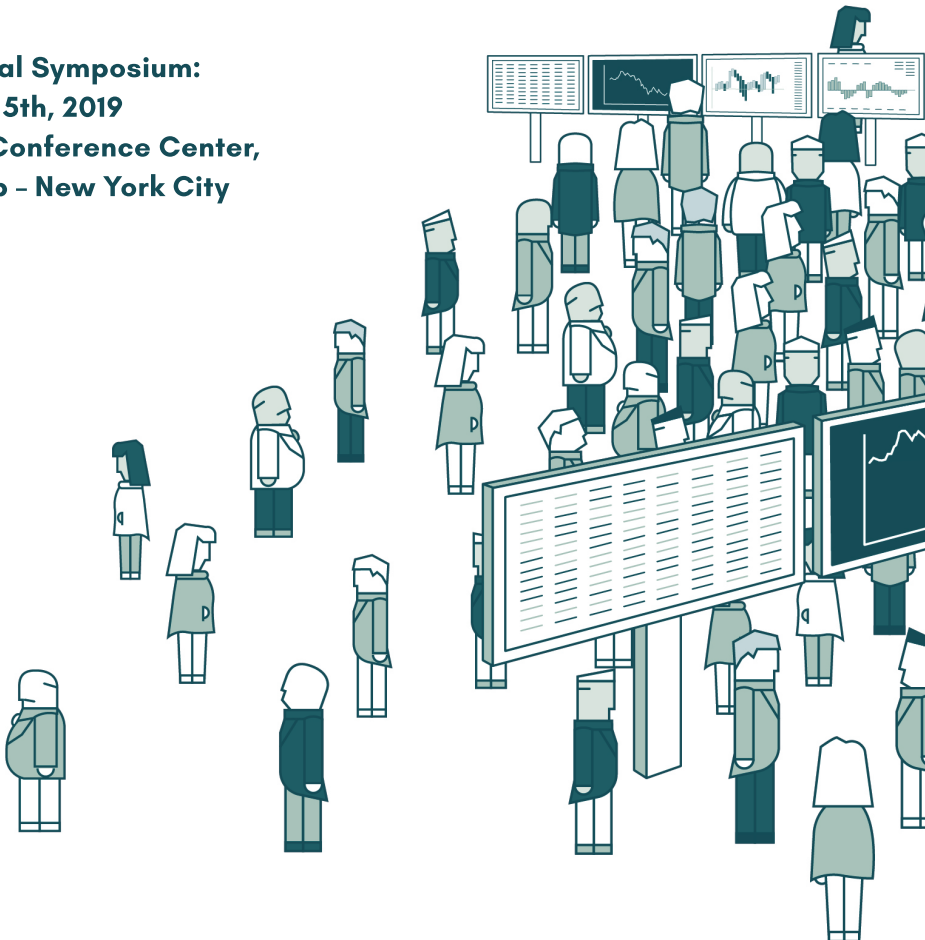


2019 Annual
SYMPOSIUM

Navigating the Gap:

FORCES THAT INFLUENCE PRICE DYNAMICS

**2019 Annual Symposium:
April 4th - 5th, 2019
Convene Conference Center,
32 Old Slip - New York City**



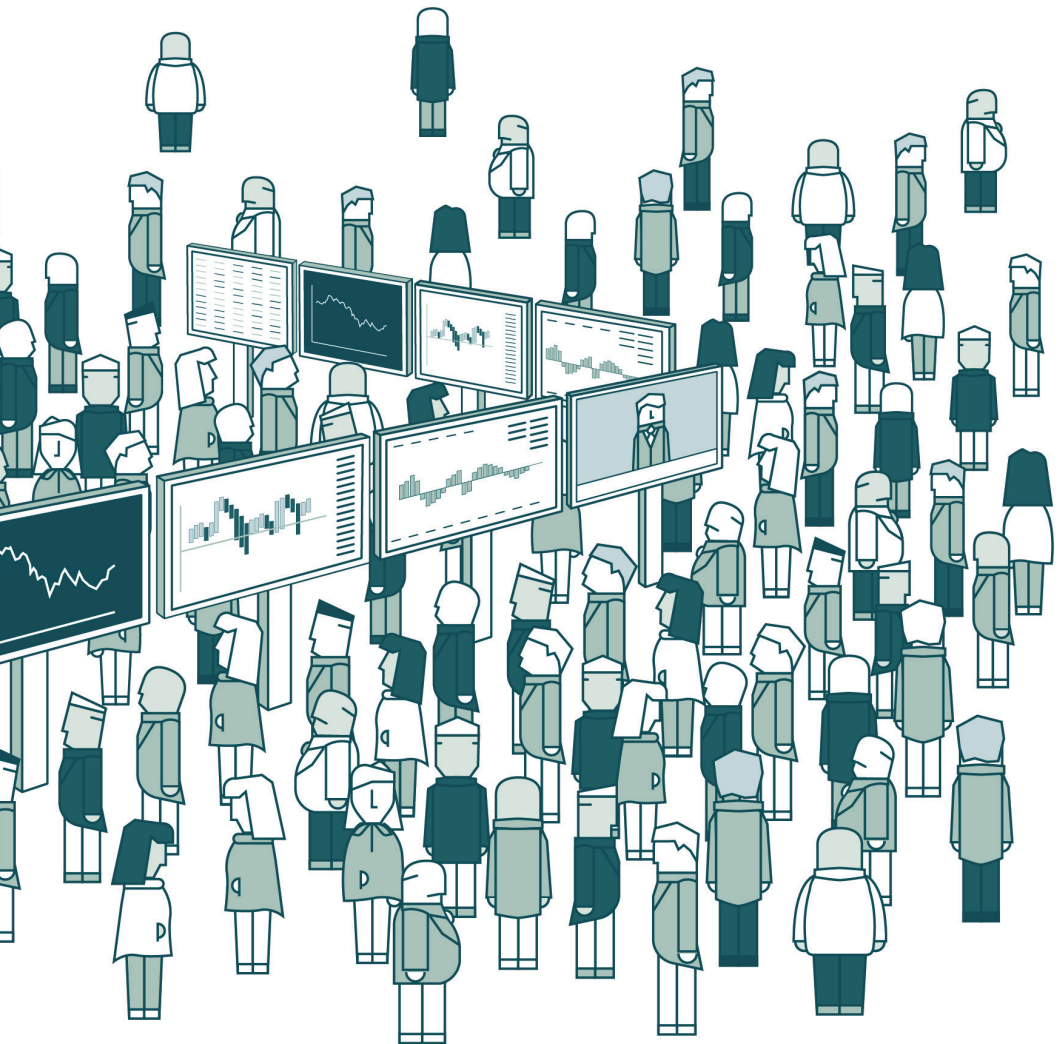


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2019 ANNUAL SYMPOSIUM

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GUIDE



Networking Breaks

Join us in the Sponsor Exhibit to connect with other CMT's.



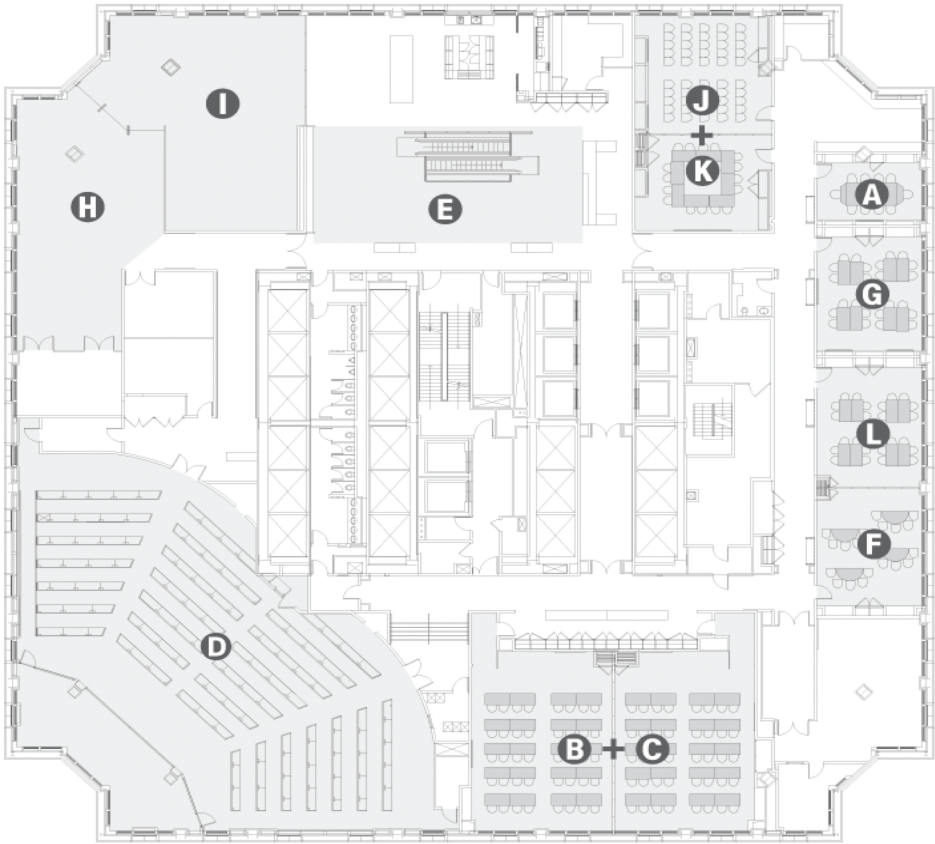
Interactive Breakout Sessions

Choice of one presentation from three different topics, classroom style.



Panel Discussions

Join in on panel discussions and Q&A's from some of our presenters.



ROOM KEY

D	Auditorium
J+K	Wall Hub
B+C	Exchange Hub
E	The Foyer / Registration Desk

PRIVATE SESSION

A	Boardroom
F	Front
G	Old Slip
L	Water

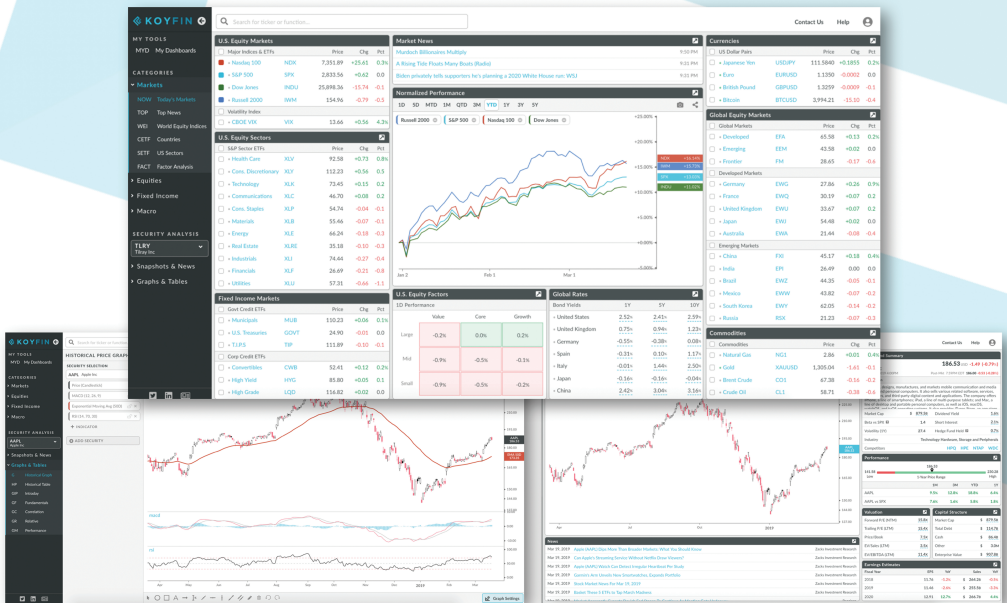
SPONSOR EXHIBIT

H+I	Overlook & Riverfront Dining
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Bill Kelleher, CMT, CFA

CMT Association Seminar Committee Chair and Board Director

Bill Kelleher is the Deputy Chief Investment Officer and the Chief Operating Officer for ETFConcepts. The Connecticut headquartered firm manages a systematic hedge fund utilizing proprietary algorithms that are intended to generate timely buy and sell signals by analyzing the drivers of price movement.

Welcome to the 2019 CMT Symposium!

Now in its 46th edition, this global investment conference has become an industry showcase of leading minds in the study of market behavior and active investment strategy. We will hear from Chief Investment Officers, Senior Portfolio Managers and Directors of Research on how they use technical analysis in their investment process. These intensive two days are designed to provide key takeaways on the current state of markets, tools/process and the changing undercurrent of our industry. We hope that you take valuable tools away from the panel discussions, individual presentations, interactive sessions and from fellow delegates. We have attendees hailing from all over the world. Don't miss this opportunity to meet your next colleague, client or new best friend.

We are thrilled to have 37 industry experts such as Dr. Emanuel Derman, Felix Zulauf, George Noble, Michael Santoli and dozens more from around the globe, speaking about how they integrate contemporary technical, quantitative, and behavioral research into their decision-making process. The planning process for this

year's event opened the opportunity to include a full track of interactive sessions into Friday's agenda from behavioral finance experts and we hope that you will find tremendous value in their research and applied techniques.

I encourage you to take the opportunity to network with your fellow attendees at one of the many in-conference networking sessions as well as our Thursday night industry celebration, which will be held April 4th, at the Beekman Hotel from 6-9pm. Skillfully crafted menus from acclaimed chef and restaurateur Tom Colicchio, and delectable prohibition-era libations will accompany an evening of eclectic vaudevillian entertainment and relaxed social celebration.

We hope that you return from the Symposium with valuable insights on the current state of the markets, new tools to use in your investment process, and a refreshed perspective on our industry.

This is your conference. You are driving the conversation, and we sincerely thank you for helping us all advance the discipline of technical analysis.

Agenda

PRECONFERENCE KICKOFF WEDNESDAY, APRIL 3RD

5:00 PM

Guest Registration

5:30 PM

Opening Remarks from CMT Association

5:40 - 7:00 PM

Panel Discussion and Q&A

Panelists: Thomas O'Halloran, JD, CFA,
Mark Dibble, Scott Richter, CMT, CFA, CHP

Moderated by: Tony Dwyer



The CMT Association invites you to join us on Wednesday, April 3rd in New York as we convene a panel of distinguished market-leading portfolio managers. Through a lively discussion on the application of technical analysis to the investment management process, our distinguished panelists will share their experience on the buy-side and the importance of technical tools to assessing risk and reward in today's equity markets.

7:00 - 8:00 PM

Networking Reception



DAY ONE THURSDAY, APRIL 4TH

7:15 - 8:00 AM

Foyer & Riverview

Breakfast and Registration

8:00 - 8:50 AM

Auditorium - D

Technical Market Analysis: Industry Perspectives

Michael Santoli

Our opening keynote will start the 2019 Symposium with a broad perspective on the industry's use of technical analysis. CNBC Senior Markets Commentator Michael Santoli will explore how Wall St. utilizes technical analysis to understand market behavior and provide insights on the health and direction of the markets. Financial media often pits fundamental perspectives against technical observations, but helps viewers understand important levels for buyers and sellers of individual securities as well as critical measures of momentum and trend over multiple time frames.

8:50 - 9:50 AM

Auditorium - D

FICC Strategy & Intermarket Overview

George Davis, CMT & Paul Ciana, CMT

The second session will continue in our main ballroom as two leading FICC strategists dive deep into the technical view on Rates, Currencies, Commodities and important intermarket relationships they are watching with respect to Equities. The FICC Strategists will present a broad global outlook for 2019 individually and finish the session with a moderated discussion of key takeaways and intermarket perspectives on global investing.

9:50 - 9:55 AM

Auditorium - D

**Presentation of 2019 Dow Award
by Tim Hayes, CMT**

Dow Award Winner Chris Diodato, CMT, CFA

The CMT Association grants the 2019 Charles H. Dow Award to Christopher Diodato for his paper *Making the Most Of Panic - Exploring The Value Of Combining Price & Supply/Demand Indicators*. The paper has been recognized for its holistic approach to combining indicators and time frames to identify periods of market panic.

9:55 - 10:10 AM

Foyer & Riverview

Networking Break



10:10 - 10:55 AM

Auditorium - D

Interactive Session #1

Select one of the presentations from three different tracks:



1. Making the Most of Panic - Exploring the Value of Combining Price & Supply/Demand Indicators

Chris Diodato, CMT, CFA

Buying during periods of investor panic has been an established tenet of not only technical analysis, but of investing for centuries. Technical analysts were some of the first to try to quantify investor panic - first with price patterns, then oscillators, and then supply/demand indicators. This 2019 Dow Award winning paper establishes that using a set of price-based indicators alone will inevitably lead to missed opportunities and proposes a more holistic approach to identify periods of market panic. The studies in this report apply to both shorter-term and longer-term timeframes. Armed with this knowledge, capturing profitable opportunities, and accurately identifying new uptrends should be significantly enhanced.

Exchange Hub - B+C

2. **The A.I. of Point & Figure**

Tom Dorsey

Tom Dorsey has become one of the industry's foremost experts in Point & Figure Charting. He teaches this method of understanding supply and demand relationships worldwide. Mr. Dorsey is the author of *Point & Figure Charting: The Essential Application for Forecasting and Tracking Market Prices*.

The AI of Point & Figure is the title of Tom's next book which is itself a humorous misnomer. There is no artificial intelligence in point-and-figure charting! It is performed today using the same methods by which it was once performed by hand, decades ago. But technology has enabled investors to take this simple method of analysis and create models for every exchange in the world, allowing for hands-free investing from any location.

Wall Hub - J+K

3. **Adding an Evidence Based Investment Strategy to Your Business**

Nick Radge

Whether you are an investment advisor, broker, fund manager or newsletter publisher, developing new prospects and managing ongoing client retention can be challenging, especially during difficult market environments such as the 2008 crisis. Anchored by technical analysis, Nick Radge has spent over 30 years developing a substantial investment business and consulting to an array of financial market experts on the merits of using evidence-based investment strategies. The media hype and opacity surrounding 'Quants' and 'Algo Trading' is at best unhelpful and distracting. Indeed, it can be a simple process. In this highly competitive marketplace, building trust is key. Differentiating your business and becoming a niche authority is critical to adding value and growing your business. In this talk, Nick will discuss a variety of business models that he has implemented for himself and clients, while outlining important components of developing your own evidence-based investment strategy.

11:00 - 11:45 AM

Interactive Session #2

Select one of the presentations from three different tracks:



Auditorium - D

1. Future Trends in Investment Management

Stavros Iatridis

Advances in technologies (new data sources) and regulations (MiFID II) are transforming the investment management landscape. How will these trends impact the role of technical analysis within the investment management industry? Stavros Iatridis, founder of Vestmo Global Research, has over 35 years of investment management experience and has developed new and innovative uses for technical analysis. These processes enable institutional investors to harness new sources of alpha, cut operating costs and offer new products. Stavros will present an overview of key drivers behind these trends and offer actionable takeaways for providers and users of technical analysis. Attendees will have an opportunity to discuss these findings.

Exchange Hub - B+C

2. Integrating Technical Analysis into a Fundamental Framework

Blaze Tankersley, CMT, CFA

At 3|5 Global Analytics, our mantra is “Technical things happen for fundamental reasons.” We will be discussing forensic evaluation of technical charts to streamline and sharpen the fundamental decision-making process. We will discuss the importance of volume characteristics in conjunction with price action to identify major fundamental turning points. We will also highlight the role algorithmic/systematic program traders play in pricing securities and explore how managers can increase their pricing efficiency and timing in the context of a highly technical liquidity environment.

Wall Hub – J+K

3. **Yes, There Is Alpha In The Marketplace; We'll Show Where**

Larry Connors & Chris Cain, CMT

In this presentation Larry Connors and Chris Cain, CMT, from Connors Research will share with you their newest research and strategies showing there is alpha in the marketplace. Larry and Chris will share with you systematic, data-backed strategies utilizing trend following and mean reversion on the long side and on the short side for ETFs and stocks, and in the fixed income markets.

Larry and Chris will refute the argument that there is no more alpha available for active money managers and traders. You'll leave this presentation with new systematic strategies which you can apply immediately.

12:00 – 1:00 PM

Auditorium – D

Building Blocks of Technical Analysis: Charting Today's Market

Panelists: Ralph Acampora, CMT,
Tom Dorsey, Craig Johnson, CMT, CFA

Moderated by: Gina Martin Adams, CMT, CFA

Join Fidelity Investments and the CMT Association for a thoughtful look at two of the most important concepts in Technical Analysis: Momentum and Supply & Demand. Why do these two key concepts offer so much insight to investors and traders? What indicators and price charts are useful in visualizing this data? This panel of industry elites will share how technical indicators can be applied to today's markets to improve decision making. Our panelists will explore the history and application of several indicators to form their market outlook and identify opportunities & risk.



1:00 – 1:30 PM

Auditorium – D

Trade Desk with John Gagliardi, CMT - Fidelity Tools and Resources

1:00 - 1:45 PM

Foyer & Riverview

Lunch

1:50 - 2:35 PM

Interactive Session #3

Select one of the presentations
from three different tracks:



Auditorium - D

**1. The O'Neil Approach to Investing
in Growth Stocks**

Irusha Peiris, CMT

Investor's Business Daily has guided investors through 35 years of stock market ups and downs. The company has thrived in good times and stayed strong in corrections due to the investing system pioneered by its founder, legendary investor William O'Neil. Irusha Peiris CMT, Manager of MarketSmith, will examine three key elements of investing success practiced by O'Neil and IBD: Fundamental Analysis, Pattern Analysis and Relative Strength. He will also share some advanced concepts that he uses during the analysis process.

Exchange Hub - B+C

2. The Power of Momentum

Julie Dahlquist, Ph.D., CMT

Technical analysts have long been aware of the power of momentum. Rising asset prices tend to continue to rise while falling asset prices tend to fall further. Momentum signals are based upon the empirical observation that stocks with strong performance in one period tend to outperform in the next period. The persistence of momentum in the market has also led to a great deal of academic exploration of the topic. Participants in this session will explore how momentum is defined among practitioners and academics and consider the evidence of the profitability of momentum-based strategies.

Wall Hub - J+K

3. **Money Flow & Relative Performance Analysis Indicators To Help Identify Bullish & Bearish Markets**

Terence Brogan, CMT

With over 70 years of collective experience using technical analysis to analyze the equity markets, Terence will explain how The Brogan Group Equity Research pioneered blending both Money Flow & Relative Performance metrics into an equally weighted 2-Factor Model. He will show that, by ranking and scoring these same metrics, it's possible to identify the best investment vehicles for both Bull and Bear Markets. He will then demonstrate how Relative Performance Analysis of Cyclical / High Beta Sectors and Non-Cyclical / Low Beta Sectors can help investors outperform the S&P500. Finally, Terence will present The Brogan Group's new research on the Money Flow Analysis of the DOW 30 to enable investors to take informed positions in both Bull and Bear Markets.

2:40 - 3:25 PM

Interactive Session #4

Select one of the presentations from three different tracks:



Auditorium - D

1. **Combining Fundamental and Technical Momentum: Lord Abbett's Unique Approach to Growth Investing**

Vernon Bice, CMT

Vernon Bice, CMT works on an industry-leading portfolio management team at Lord Abbett. This session will focus on their approach to "fusion investing" - integrating technical and fundamental analysis in the portfolio context. Vernon will share insights from his experience introducing the technical toolkit to a predominantly fundamental driven investment process. He will explain how technical analysis has become critical for assessing opportunities and managing risk in their portfolio. Factors such as momentum and relative strength are essential to the Lord

Abbett small cap growth team. The fusion concept recognizes that whether your process is predominantly fundamental, technical or macro, having the perspective of other disciplines leads to better performance.

Exchange Hub - B+C

2. **QuantLogic Edge Charts**

Trevor Neil, MSTA, MCSI

During this presentation, Trevor Neil will share with you some of his latest work on a new visualization of Market Profile distributions in multi-timeframes. As we know, trading activity moves markets into and out of areas of congestion. Moving away from a congestion area causes those who traded in it to feel pain or pleasure as they lose or make a profit. Areas of light trading activity offer little interference to the directional trend of the move until the next area of congestion, where there will be position holders who want to take profits or cut losses. But how can analysts recognize and measure the power of these congestion areas?

Up to now, investors and traders have used distributions of trading at a price to establish statistically where the congestion areas are. But this is limited to one, usually short, time frame. In live markets, there are short term distributions which may overlay on to intermediate distributions. High/Low/close charts or Market Profile® charts cannot display multiple congestion areas formed in different time frames in one chart.

Trevor Neil, an experienced professional technical analyst, has been involved in making visualizations of complex data clear in charts using modern graphics. Just as Relative Rotation Graphs® show complex relative relationships of securities against a benchmark in a single clear picture, QuantLogic Edge® shows multiple time frame distributions at a price. It also evaluates the importance of these levels together; helping today's portfolio manager visualize complex information clearly and in a usable form.

3. **The Role of Technical Analysis in Portfolio Construction and Position Sizing**

Louis Llanes, CMT, CFA

Louis Llanes will share how quantitative technical techniques can improve decision-making for portfolio managers in a multi-disciplinary environment. Louis will cover a framework for creating technical factors and algorithms that can improve portfolio construction, position sizing and managing risk. Attendees will also better understand how technical factors can be classified by return, risk and diversification and how they can help generate target security weights and trading actions.

3:25 – 3:45 PM

Foyer & Riverview

Afternoon Networking Break



3:45 – 4:15 PM

Auditorium – D

Presentation of Awards

Presented by Stanley Dash, CMT

Service Award to Mark Cremonie, CMT, CFA

The CMT Association honors Mark Cremonie for selfless service to the CMT Program Curriculum and Test Committee. As a colleague and mentor, he has been instrumental in the continued development of the CMT Program.

Memorial Award to Paul Desmond

In honor of his long service to the profession of technical analysis in general and to the CMT Association in particular. As CMT Association President, he guided the Association through its transition to a more business-like organization. As head of Lowry's Research, he continued and expanded one of the most respected and time-tested technical analysis research products in the world.

Joffre Lefevre, CEO of Lowry Research and Paul's son in law will receive the Memorial Award on his behalf and present some of Paul's findings from his 2002 Dow Award winning research. As long as stock exchanges have existed, analysts and investors have always placed heavy emphasis on the difficult task of identifying the primary trend of the stock market. It is important to recognize that the pattern of 90% Days is not a new, untried discovery. The original research was conducted by the Lowry staff in early 1975. The findings were first reported to the investment community in 1982 at a Market Technicians Association Conference. Since that time, the history of 90% Days has been recorded day by day and has proven repeatedly to be a very valuable tool in identifying the extremes of human psychology that occur near major market bottoms. The 90% indicator, as outlined in Paul's paper, will be an enduring, important part of stock market analysis, since it, like the other facets of the Lowry Analysis, is derived directly from the Law of Supply and Demand – the foundation of all macro-economic analysis.

4:15 – 5:15 PM

Auditorium – D

Using Market Timing to Enhance Macro Investing

Fireside Chat with Felix Zulauf & Barry Ritholtz

In this fireside chat, Barry Ritholtz will interview Felix Zulauf about his incredible career managing returns over multiple market cycles. They will discuss strategies to use market timing to enhance macro investing. Zulauf Consulting offers proprietary global macro research, covering various topics such as equities, fixed income, credit markets, currencies, commodities, and geopolitical themes. The research has a strategic approach with commentary on both the short-term and medium-term outlook. In addition to offering written research reports, Felix Zulauf provides consulting services to his institutional clients.

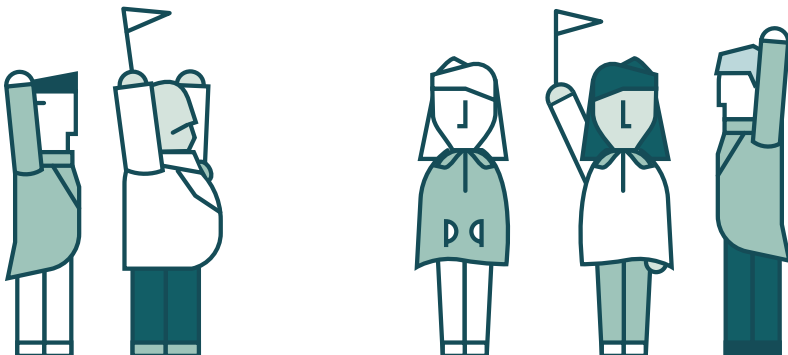
5:15 PM

Concluding Remarks

6:00 PM

Industry Celebration – Beekman Hotel “The Cellar”

The romance of Old New York is alive and well at The Beekman, which offers a blend of classic glamour and contemporary charm. Join us Thursday evening to celebrate the 46th Anniversary of the CMT Association’s Annual Symposium at The Cellar – a prohibition era speakeasy in lower Manhattan’s historic Beekman Hotel with menus created by acclaimed chef and restaurateur Tom Colicchio. Upstairs, the hotel itself is steeped in history. The building dates to 1883 and was one of Manhattan’s first skyscrapers. The landmark Queen Anne--style building sat centerstage in the city’s original theatre district. Skillfully crafted cocktails and exquisite libations will accompany an evening of eclectic vaudevillian entertainment and relaxed social celebration. The evening begins at 6:00pm upon the conclusion of Thursday’s presentations. Once guests arrive at The Cellar, they will be welcomed by the CMT Association staff to a lavish celebration of delectable food, handcrafted cocktails and ample opportunities for networking with colleagues, clients and friends.



DAY TWO FRIDAY, APRIL 5TH

7:15 - 8:00 AM

Foyer & Riverview

Breakfast and Registration

8:00 - 9:00 AM

Auditorium - D

Opening Panel: Navigating the Behavioral Gap

Panelists: Clare Flynn Levy, Jason Voss, CFA, C. Thomas Howard, Ph.D.; and Brett Whysel

Moderated by: Rick Lehman



The applications of behavioral science to finance are now broad and well researched. They encompass activities such as spending, investing, trading, financial planning, portfolio management and business commerce. In addition, behavioral implications are also turning on end some of the former Nobel prize-winning theories about how economies and financial markets function. Join this panel discussion to better understand the applications of behavioral research to your active portfolio management process.

9:05 - 9:50 AM

Interactive Session #5

Select one of the presentations from three different tracks:



Auditorium - D

1. Behavioral Finance Enrique Fatas, Ph.D.

In his research, Professor Fatas uses an interdisciplinary approach to study the behavioral determinants of institutional performance and the behavioral consequences of political conflict. As his Scholar webpage suggests, he researches behavioral economics, public economics, organizational behavior, industrial organization and the economics of conflict. Dr. Fatas is a Professor at the School of Economics at the University of

East Anglia in Norwich, England and a senior research fellow at the Center for Experimental Social Science at Nuffield College at Oxford and the University of Santiago, the Behavioral Ethics Laboratory at the University of Pennsylvania, and the Universidad del Rosario.

Exchange Hub - B

2. **The A.I. of Point & Figure**

Tom Dorsey

Tom Dorsey has become one of the industry's foremost experts in Point & Figure Charting. He teaches this method of understanding supply and demand relationships worldwide. Mr. Dorsey is the author of *Point & Figure Charting: The Essential Application for Forecasting and Tracking Market Prices*.

The AI of Point & Figure is the title of Tom's next book which is itself a humorous misnomer. There is no artificial intelligence in point-and-figure charting! It is performed today using the same methods by which it was once performed by hand, decades ago. But technology has enabled investors to take this simple method of analysis and create models for every exchange in the world, allowing for handsfree investing from any location.

Exchange Hub - C

3. **Adding an Evidence-Based Investment Strategy To Your Business**

Nick Radge

Whether you are an investment advisor, broker, fund manager or newsletter publisher, developing new prospects and managing ongoing client retention can be challenging, especially during difficult market environments such as the 2008 crisis. Anchored by technical analysis, Nick Radge has spent over 30 years developing a substantial investment business and consulting to an array of financial market experts on the merits of using evidence-based investment strategies. The media hype and opacity surrounding 'Quants' and 'Algo Trading' is at best unhelpful and distracting. Indeed, it can be a simple process. In this highly competitive

marketplace, building trust is key. Differentiating your business and becoming a niche authority is critical to adding value and growing your business. In this talk, Nick will discuss a variety of business models that he has implemented for himself and clients, while outlining important components of developing your own evidence-based investment strategy.

9:50 - 10:15 AM

Foyer & Riverview

Networking Break



10:15 - 11:00 AM

Interactive Session #6

Select one of the presentations from three different tracks:



Auditorium - D

1. Behavioral Feedback & Control from Essentia Analytics

Clare Flynn Levy

While the investment management industry struggles to wrap its head around how AI fits into its future, next-generation human portfolio managers are using machine learning, today, to help them understand and continuously improve the one thing about investing they can actually control: their own behavior.

Exchange Hub - B

2. **Integrating Technical Analysis into a Fundamental Framework**

Blaze Tankersley, CMT, CFA

At 3|5 Global Analytics, our mantra is “Technical things happen for fundamental reasons.” We will be discussing forensic evaluation of technical charts to streamline and sharpen the fundamental decision-making process. We will discuss the importance of volume characteristics in conjunction with price action to identify major fundamental turning points. We will also highlight the role algorithmic/systematic program traders play in pricing securities and explore how managers can increase their pricing efficiency and timing in the context of a highly technical liquidity environment.

Exchange Hub - C

3. **Future Trends in Investment Management**

Stavros Iatridis

Advances in technologies (new data sources) and regulations (MiFID II) are transforming the investment management landscape. How will these trends impact the role of technical analysis within the investment management industry? Stavros Iatridis, founder of Vestmo Global Research, has over 35 years of investment management experience and has developed new and innovative uses for technical analysis. These processes enable institutional investors to harness new sources of alpha, cut operating costs and offer new products. Stavros will present an overview of key drivers behind these trends and offer actionable takeaways for providers and users of technical analysis. Attendees will have an opportunity to discuss these findings.

11:05 - 11:50 AM

Interactive Session #7

Select one of the presentations from three different tracks:



Auditorium - D

1. Behavior is Alpha

Jason Voss, CFA & C. Thomas Howard, Ph.D.

C. Thomas Howard, Ph.D., CEO and Chief Investment Officer of AthenaInvest will share the big-data methodology behind the firm's investment approach that harnesses measurable and persistent behavioral price distortions. Using the successful Global Tactical ETFs portfolio to demonstrate this methodology, Dr. Howard will explain how measuring deep behavioral currents can drive equity market returns. Following the same philosophy that human behavior is the true source of alpha, Jason Voss, CFA, CEO of Active Investment Management (AIM) Consulting, LLC will share how to incorporate behavioral assessment into investment process, fundamental analysis, and in-person interactions with management.

Exchange Hub - B

2. The Power of Momentum

Julie Dahlquist, Ph.D., CMT

Technical analysts have long been aware of the power of momentum. Rising asset prices tend to continue to rise while falling asset prices tend to fall further. Momentum signals are based upon the empirical observation that stocks with strong performance in one period tend to outperform in the next period. The persistence of momentum in the market has also led to a great deal of academic exploration of the topic. Participants in this session will explore how momentum is defined among practitioners and academics as well as consider the evidence of the profitability of momentum-based strategies.

Exchange Hub - C

3. **Money Flow & Relative Performance Analysis - Indicators To Help Identify Bullish & Bearish Markets**

Terence Brogan, CMT

With over 70 years of collective experience using technical analysis to analyze the equity markets, Terence will explain how The Brogan Group Equity Research pioneered blending both Money Flow & Relative Performance metrics into an equally weighted 2-Factor Model. He will show that, by ranking and scoring these same metrics, it's possible to identify the best investment vehicles for both Bull and Bear Markets. He will then demonstrate how Relative Performance Analysis of Cyclical / High Beta Sectors and Non-Cyclical / Low Beta Sectors can help investors outperform the S&P500. Finally, Terence will present The Brogan Group's new research on the Money Flow Analysis of the DOW 30 to enable investors to take informed positions in both Bull and Bear Markets.

11:50 - 12:15 PM

Foyer & Riverview

Lunch Served

Attendees are welcome to enjoy lunch in the Auditorium during the panel discussion.

12:20 - 1:20 PM

Auditorium - D

Market Strategists Panel: How Technical Research Improves Institutional Traders Performance



Panelists: Todd Sohn, CMT; John Kolovos, CMT, CFA;
Cody Tafel, CMT, CAIA

Moderated by: Abigail Doolittle

Join us for a fast-paced discussion of the markets while we explore the relationship between research and trading. This panel of distinguished and diverse market-leading speakers will cover the tools, process, and market calls that lead to better alpha capture and risk management. Led by Bloomberg Markets Reporter, Abigail Doolittle, this lively debate on the current state and trend of the market will explore where the financial industry is heading and how technical research impacts buy-side trading decisions.

1:25 - 2:10 PM

Interactive Session #8

Select one of the presentations from three different tracks:



Auditorium - D

1. **Cognitive and Emotional Biases: Mitigate or Accommodate?**

Dr. Greg Filbeck, CFA, FRM, CAIA, CIPM, PRM

Both private wealth management clients and professionals can be affected by cognitive and emotional biases. Such biases can have significant impact on risk tolerance assessment in the investment policy statement and affecting asset allocation selection. In some instances, portfolio objectives can be achieved regardless; in other instances, such objectives may be compromised.

As professionals, how should we recognize our own biases? And for our clients, what options exist to potentially mitigate these biases? Are their circumstances when it is acceptable to accommodate them? In this session, we will explore a small number of cognitive and emotional biases, discuss how each may manifest itself, assess likelihood of mitigation, and explore implications in the context of standard of living risk.

Exchange Hub - B

2. **QuantLogic Edge Charts** **Trevor Neil, MSTa, MCSI**

During this presentation, Trevor Neil will share with you some of his latest work on a new visualization of Market Profile distributions in multi-timeframes. As we know, trading activity moves markets into and out of areas of congestion. Moving away from a congestion area causes those who traded in it to feel pain or pleasure as they lose or make a profit. Areas of light trading activity offer little interference to the directional trend of the move until the next area of congestion, where there will be position holders who want to take profits or cut losses. So the question becomes how to recognize and measure the power of these congestion areas?

Up to now, investors and traders have used distributions of trading at a price to establish statistically where the congestion areas are. But this is limited to one, usually short, time frame. In live markets, there are short term distributions which may overlay on to intermediate distributions. High/Low/close charts or Market Profile® charts cannot display multiple congestion areas formed in different time frames in one chart.

Trevor Neil, an experienced professional technical analyst, has been involved in making visualizations of complex data clear in charts using modern graphics. Just as Relative Rotation Graphs® show complex relative relationships of securities against a benchmark in a single clear picture, QuantLogic Edge® shows multiple time frame distributions at a price. It also evaluates the importance of these levels together; helping today's portfolio manager visualize complex information clearly and in a usable form.

Exchange Hub - C

3. The Role of Technical Analysis in Portfolio Construction and Position Sizing

Louis Llanes, CMT, CFA

Louis Llanes will share how quantitative technical techniques can improve decision-making for portfolio managers in a multi-disciplinary environment. Louis will cover a framework for creating technical factors and algorithms that can improve portfolio construction, position sizing and managing risk. Attendees will also better understand how technical factors can be classified by return, risk and diversification and how they can help generate target security weights and trading actions.

2:15 - 3:15 PM

Auditorium - D

A Stylized History of Quantitative Finance

Dr. Emanuel Derman

The evolution of a quantitative approach to finance has proceeded through many small but significant steps and occasional large epiphanies. This talk outlines how, over the past 70 years, financial models have quantified the notion of derivatives, diffusion, risk, volatility, the riskless rate, diversification, hedging, replication, and the principle of no riskless arbitrage, and explores their consequences. Emanuel Derman is a professor at Columbia University, where he directs their program in financial engineering. He is the author of *My Life As A Quant*, one of Business Week's top ten books of the year, in which he introduced the quant world to a wide audience. His latest book is *Models. Behaving. Badly: Why Confusing Illusion with Reality Can Lead to Disasters*, On Wall Street and in Life. Join us for a historical perspective on the applications of quantitative finance and the evolution of the discipline during the past 70 years.

3:15 - 3:45 PM

Auditorium - D

Award Presentation

2019 CMT Annual Award to Gerald Appel

The recipient of the 2019 CMT Annual Award recognizing the lifetime achievement and contribution to the discipline of technical analysis is Gerald Appel – creator of the MACD. Gerald's son Marvin Appel will receive the award on his behalf and provide some commentary on his father's innovative work that has shaped a generation of trend-following investors.

3:45 - 5:15 PM

Auditorium - D

Closing Keynote Session

George Noble with Stavros Iatridis

Join George Noble as he presents the closing keynote session at the 46th CMT Symposium on Friday, April 5th. George brings 38 years of investment experience to the asset management business. He began his career at Fidelity in 1981, and later was the initial manager of Fidelity's first international equities product, the Fidelity Overseas Fund. In the first year of operation, the fund was ranked the number one mutual fund in the country. Mr. Noble has also served as CIO for several hedge funds in the global long/short equity category. This fireside chat will cover his investment experience over multiple market cycles and explore the technical tools that informed some of his most important decisions and positions.

5:15 - 6:15 PM

Closing Cocktail Reception



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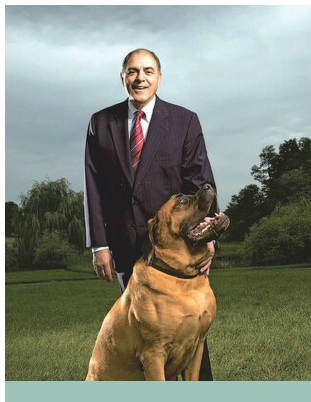


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2019 Presenters

NAVIGATING THE GAP FORCES THAT INFLUENCE PRICE DYNAMICS



Ralph Acampora, CMT

Co-Founder of the CMT Association

Ralph Acampora, CMT is a pioneer in the development of market analytics. He has a global reputation as a market historian and a technical analyst, providing unique insights on market timing and related investment strategy issues to a wide audience within the financial industry. Ralph has been an instructor at the New York Institute of Finance for close to four decades, and previously served as the NYIF's Director of Technical Analysis Studies. Before joining NYIF, he was Director of Technical Research at Knight Equity Markets.

Prior to joining Knight, he worked for 15 years at Prudential Equity Groups as its Director of Technical Analysis. Ralph is one of Wall Street's most respected technical analysts and has been consistently ranked by Institutional Investor for more than ten years. He is regularly consulted for his opinion on market events by several major business news networks as well as national financial publications. He helped create the Chartered Market Technician designation and continues to advocate for its application in distinguishing practitioners of technical analysis.



Gina Martin Adams, CMT, CFA

Chief Equity Strategist, Bloomberg Intelligence

Gina Martin Adams, CMT, CFA, is the Chief Equity Strategist and Director of Global Equity Strategy, ETF and ESG Research for Bloomberg Intelligence, a division of Bloomberg LP, and is based in New York, NY.

Gina provides top-down perspective on the equity market, sectors and industries with a multi-disciplined approach that utilizes fundamental, quantitative and technical analysis. She frequently presents her views at industry conferences, professional associations and investment organizations, and has been recognized for portfolio strategy, technical strategy and economics in Institutional Investors' All-America Research survey.

Prior to joining Bloomberg, she was the head of U.S. Equity Strategy for Wells Fargo Securities, where she provided analysis and investment allocation recommendations for Wells Fargo Securities' institutional clients. Previously, she was an economist for Wachovia Bank, and an investment strategy analyst for Evergreen Asset Management.

Gina holds a Bachelor of Science degree in Business Administration with concentrations in Finance and Marketing from the University of Florida. She holds the Chartered Financial Analyst and Chartered Market Technician designations, and is a member of the CFA Institute, the New York Society of Security Analysts, the CMT Association, the American Association of Professional Technical Analysts, the Financial Women's Association, and 100 Women in Finance.



Vernon Bice, CMT

Portfolio Manager, Lord Abbett

Vernon Bice is responsible for contributing to the management for the firm's micro-cap growth, small cap growth, and growth equity strategies. He plays a key role in technical analysis, drawing on his deep experience to provide insights to the portfolio management team. Mr. Bice joined Lord Abbett in 2011. His prior experience includes serving as Portfolio Analyst at Bank of America; Research Analyst at BNY Institutional Asset Management; and Investment Associate at UBS. He has worked in the financial services industry since 2001. He earned a BS in nutrition science from The Ohio State University and is a holder of the Chartered Market Technician® (CMT) designation.



Terence Brogan, CMT

Equity Market Strategist, Brogan Group Equity Research

Terence Brogan, who holds a Chartered Market Technician (CMT) designation, is the Co-Head Market Technician and Equity Market Strategist for The Brogan Group Equity Research (BGER), which is a division of Wellington Shields & Co, LLC. He is responsible for producing and marketing The Brogan Group's Money Flow/Relative Performance Equity Research. In addition, Terence is the editor of a daily market letter called "The Relative Report" where he provides daily commentary on equity market strategy using their proprietary money flow research and asset allocation to help institutional money managers with their investment decision process.

Terence joined his Father at The Brogan Group Equity Research in 2002, and in so doing, it became a family-managed research firm. His brother, Rob, joined them in 2008 just prior to the merger with Shields & Company in 2009 to form Wellington Shields & Co, LLC.

Earlier, Terence was part of John Hancock's wholesale distribution team that provided investment products to retail brokers in New York and New Jersey territories. Terence holds a Bachelor's degree in Psychology from Saint Anselm College.



Paul Ciana, CMT

Chief Global FICC Technical Strategist, Bank of America

Paul Ciana is Bank of America's Chief Global FICC Technical Strategist and Director of Research.

Paul believes the best technical strategy is a diversified technical strategy, so he aligns proprietary and familiar technical theory to make the best call. He publishes his views on Rates, FX, Commodities and emerging markets in the Technical Advantage report and manages his open trades in the Chart Alpha report. He publishes a popular primer series called Technicals Explained and Quantifying Technicals. He contributes regularly to cross discipline reports such as Global FX Weekly, Global Rates Weekly and Global Liquid Markets Weekly, too. Paul is ranked among the top Technical Analysts in the All-American Fixed-Income Institutional Investor survey. Prior to Bank of America, Paul he led the technical analysis specialists at Bloomberg LP.

Ciana authored the book *New Frontiers in Technical Analysis*, October 2011, John Wiley & Sons. He has been a speaker and panelist at industry events including the CFA, CMT Association, IFTA, NYSSA and CAIA, and his work is regularly quoted in many mainstream media channels.

Paul earned his CMT designation in 2006 and was the president of the New York CMT Chapter and an Instructor for a CMT preparation course. Paul received his MBA in Marketing and Finance from Fordham University and a Bachelor of Science in Finance & Economics (Magna Cum Laude) from the State University of New York at Albany.



Christopher Cain, CMT

Senior Quantitative Researcher, Connors Research

Chris Cain, CMT, is a quantitative trader, researcher and trading system developer. He is currently senior quantitative researcher at Connors Research. Mr. Cain has 10 years of institutional fixed income trading experience, serving as a market maker throughout the yield curve in fixed income instruments. He is passionate about quantitative trading, investing, data science and behavioral finance. He is the co-author of the upcoming book, "The Alpha Formula."





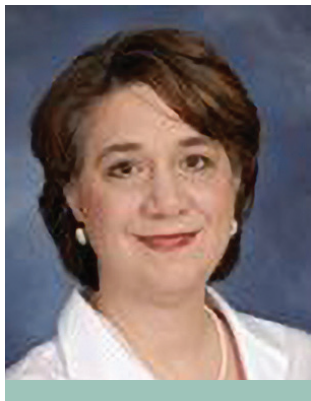
Laurence Connors, CMT
Chairman of The Connors Group

Laurence Connors is Chairman of The Connors Group (TCG), and the principal executive officer of Connors Research LLC. TCG is a financial markets information company that publishes daily commentary and insight concerning the financial markets and has twice received an award by the Entrex Private Company Index for being one of the 10 fastest growing private companies.

He has over 30 years of experience working in the financial markets industry. He started his career in 1982 at Merrill Lynch as an Investment Advisor, and later moved on to become a Vice President with Donaldson, Lufkin, Jenrette (DLJ), where he worked with the Investment Services Group from October 1990 to March 1994. Mr. Connors is widely regarded as one of the leading educators in the financial markets industry. He has authored top-selling books on market strategies and volatility trading, including *Short-Term Trading Strategies That Work*, and *Street Smarts* (with Linda Raschke). *Street Smarts* was selected by *Technical Analysis of Stocks and Commodities* magazine as one of “The Classics” for trading books written in the 20th century.

His most recent book *Buy the Fear, Sell the Greed; 7 Behavioral Quant Strategies For Traders* was published this past summer.

Mr. Connors has been featured and quoted in the *Wall Street Journal*, *New York Times*, *Barron’s*, *Bloomberg TV & Radio*, *Bloomberg Magazine*, *Dow Jones Newswire*, *Yahoo Finance*, *E-Trade Financial Daily*, *Technical Analysis of Stocks and Commodities*, and many others. Mr. Connors has also been a featured speaker at several major investment conferences over the past two decades.



Julie Dahlquist, Ph.D., CMT

Associate Professor, Texas Christian University

Julie Dahlquist, Ph.D., CMT is Associate Professor of Professional Practice in the Finance Department at Texas Christian University (TCU). Previously, she served on the faculty in the business schools at University of Texas at San Antonio and at St. Mary's University. Her teaching experience spans over three decades and includes undergraduate, graduate, and Executive MBA students in programs in Mexico, Austria, Germany, Switzerland, Italy, Belgium, Greece and South Korea.

Julie is the president of the Technical Analysis Educational Foundation which works with colleges and universities to include technical analysis as an integral part of their finance curriculum. Her research has appeared in *Financial Analysts Journal*, *Managerial Finance*, *Applied Economics*, *Working Money*, *Financial Practices and Education*, and the *Journal of Financial Education*. She has served as editor of the *Journal of Technical Analysis* and on the editorial board of the *Southwestern Business Administration Journal*, as well as a reviewer for a number of other journals.

Julie has co-authored *Technical Analysis: The Complete Resource for Financial Market Technicians* with Charles Kirkpatrick and two books: *Technical Analysis of Gaps and Technical Market Indicators: Analysis and Performance* with Richard Bauer. She is the recipient of the Charles H. Dow Award for research in technical analysis and the Mike Epstein Award for promoting technical analysis in academia.

Julie graduated from the University of Louisiana at Monroe with a B.B.A. with major in economics, summa cum laude. She received her M.A. in theology from St. Mary's University and her Ph.D. in economics from Texas A&M University.



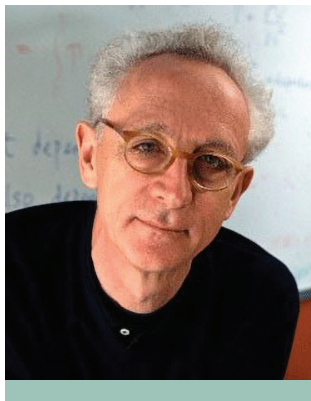
George Davis, CMT

Chief Technical Strategist FICC, RBC Capital Markets

George Davis, CMT is Managing Director and Chief Technical Strategist, Fixed Income, Currencies and Commodities at RBC Capital Markets in Toronto, Canada. With over 25 years of market experience, he is responsible for RBC's Canadian dollar forecasts as well as intermarket technical analysis research that covers the FX, fixed income and commodity asset classes. Prior to this, George was a Vice President on RBC's spot Canadian dollar and forward foreign exchange desks in Toronto and a foreign exchange Dealer in Montreal.

His technical research has been recognized via fourteen international awards in the FX, fixed income, commodity and emerging markets asset classes. George was also awarded Technical Analyst of the Year four times (2010, 2013, 2017 and 2018) by the Technical Analyst magazine and in 2016 by the Canadian Society of Technical Analysts, in addition to being inducted into the CSTA Hall of Fame in 2017. He is also a contributing author to *Technical Analysis in the FX Markets*, a book published in 2010 by Global Markets Media Ltd. George's technical views on the markets are often featured in various media outlets such as the Wall Street Journal, Financial Times, Globe and Mail, CNBC and Bloomberg.

George has a Bachelor of Commerce (Honours) from Concordia University with a major in Finance and minor in Marketing and he holds the Chartered Market Technician (CMT) designation. He is a Professional Member of the Canadian Society of Technical Analysts and a Member of the CMT Association.



Emanuel Derman, Ph.D.

Professor, Columbia University

Emanuel Derman is a professor at Columbia University, where he directs a program in financial engineering. His latest book is *The Volatility Smile*, a textbook on modern options theory. He is also the author of *Models.Behaving.Badly: Why Confusing Illusion with Reality Can Lead to Disasters, On Wall Street and in Life*, which was one of Business Week's top ten books of 2011, also published in German by Hoffman und Campe. His previous book, *My Life As A Quant*, was also one of Business Week's top ten of 2004, in which he introduced the quant world to a very wide audience.

Derman was born in South Africa, but has lived most of his professional life in Manhattan, where he has made contributions to several fields. He started out as a theoretical physicist, doing research on unified theories of elementary particle interactions. At AT&T Bell Laboratories in the 1980s he developed programming languages for business modeling. From 1985 to 2002 he worked on Wall Street, running quantitative strategies research groups in fixed income, equities and risk management, and was appointed a managing director at Goldman Sachs & Co. in 1997. The financial models he developed there, the Black-Derman-Toy interest rate model and the Derman-Kani local volatility model, have become widely used industry standards.

In his 1996 article "Model Risk," Derman pointed out the dangers that inevitably accompany the use of models, a theme he developed in *My Life as a Quant*. Among his awards and honors, he was named the SunGard/IAFE Financial Engineer of the Year in 2000. He has a Ph.D. in theoretical physics from Columbia University and is the author of numerous articles in elementary particle physics, computer science, and finance.



Mark P. Dibble

Senior Technical Analyst, Fidelity Investments

Mark P. Dibble is a Senior Technical Analyst at Fidelity Investments, where he works with a range of analysts, equity portfolio managers, and traders. Prior to joining Fidelity in 1994, he was a Vice President of Morgan Stanley in New York, providing technical research to the Global Equity Derivatives and Equity Research Departments. Mark's approach combines the traditional pattern recognition discipline of Edwards and Magee with momentum and sentiment indicators. His work focuses on the U.S. Industrial, Technology, Telecom, & Utilities sectors.

Before joining Morgan Stanley in 1984, he did technical research for Cowen & Company in New York. Mark holds a BA in Economics from Trinity College in Hartford and has 31 years of investment experience. He has portfolio oversight on the Technical Research Pilot Fund and was named to Institutional Investor's "Best of the Buy Side" in 2002. Mark is also a member of the CMT Association.



Abigail Doolittle

Correspondent, Bloomberg TV

Abigail Doolittle is a multi-platform correspondent for Bloomberg. She reports on the various financial markets throughout each business day with a focus on charts and technical analysis. Prior to joining Bloomberg Television in October 2015, Abigail was a CNBC Contributor and analyzed the financial markets regularly as a guest commentator. This was simultaneous to working as a Technical Strategist at Seaport Global Securities, an investment bank, and an analyst at Peak Theories Research at various points over the course of three years. Abigail founded Peak Theories Research, an on-line technical analysis firm, in 2009. Abigail graduated from Colgate University, summa cum laude, with a degree in philosophy and she was elected to Phi Beta Kappa.



Tom Dorsey

Co-Founder & CEO, Dorsey Wright & Associates

Tom Dorsey is the Co-Founder & Chief Executive Officer of Dorsey, Wright & Associates, a registered investment advisory firm that provides quality equity analysis and options strategies to member firms and institutions. Formerly a senior vice president and director of Options Strategies with Wheat First Securities and a stockbroker with Merrill Lynch, Dorsey has become one of the industry's foremost experts in Point and Figure Charting and teaches this method worldwide.

Tom is the author of *Point & Figure Charting: The Essential Application for Forecasting and Tracking Market Prices*, *Thriving as a Broker in the 21st Century* and *Tom Dorsey's Trading Tips: A Playbook for Stock Market Success*. He has been a regular guest on Fox's "Cavuto on Business" and "Bulls & Bears" programs, and frequently speaks to audiences worldwide on topics related to the stock market, technical analysis, and Relative Strength investing. He has written articles on equity market and options analysis for *The Wall Street Journal*, *Barron's*, *Technical Analysis of Stocks and Commodities Magazine*, and *Futures Magazine*.

Tom is a recipient of the Wharton School of Finance Securities Industry Association's Distinguished Speaker Award. He was also named Alumni of the Year 2000 for Virginia Commonwealth University and was granted the Citizens Community Award from Governor Charles Robb. Tom has also served as a member of the Philadelphia Stock Exchange Board of Advisors.



Tony Dwyer

Chief Market Strategist, Cannacord Genuity

Tony Dwyer is the Chief Market Strategist and Head of the U.S. Macro Group at Cannacord Genuity, which he joined following the firm's acquisition of Collins Stewart in 2012. Prior to joining Cannacord Genuity, Tony served as a Senior Managing Director and Chief Equity Strategist for Collins Stewart LLC from 2010–2011. In addition to his Strategist role at Collins Stewart, Tony held the position of Director of Research and sat on the Executive Committee that oversaw the firm's business. Prior to joining Collins Stewart, Tony served as the Chief Equity Market Strategist for FTN Financial's equity arm from 2003–2010. In addition to his analyst role at FTN, Tony also held the title of Co-Director of Research, Chairman of the Investment Committee and sat on the firm's Operating Committee. As a strategist, Dwyer is best known for the practical application of macroeconomic and tactical market indicators designed to assist institutional clients in making intermediate-term market and sector investment decisions. He is frequently seen and quoted on the various Financial News television and radio networks such as CNBC, FOX Business, and Bloomberg. Tony is a graduate of Le Moyne College where he earned a Bachelor of Arts degree in Political Science and currently sits on the Le Moyne College Endowment Fund Investment Committee.



Enrique Fatas, Ph.D.

Senior Fellow, Master of Behavioral and Decision Sciences; Professor of Economics, Loughborough University

Dr. Fatas is a Professor at the School of Economics at the University of East Anglia in Norwich, England and a senior research fellow at the Center for Experimental Social Science at Nuffield College at Oxford and the University of Santiago, the Behavioral Ethics Laboratory at the University of Pennsylvania, and the Universidad del Rosario. His area of study focuses on Behavioral economics, conflict and organizational behavior.

A Senior Fellow from Loughborough University in Loughborough, England, Professor Fatas teaches the core MBDS course Public Policy and Applications. His research focuses on the behavioral determinants of institutional performance and the behavioral consequences of political conflict using an interdisciplinary approach.



Dr. Greg Filbeck, CFA, CAIA, FRM, CIPM, PRM Professor, Penn State Behrend

Dr. Greg Filbeck holds the Samuel P. Black III Professor of Finance and Risk Management at Penn State Behrend and serves as Director of the Black School of Business. Before joining the Faculty at Penn State Behrend in 2006, he served as Senior Vice President of Kaplan Schweser from 1999 to 2006 where he was in charge of all content and curriculum. He also held academic appointments at Miami University (Ohio) and the University of Toledo, where he also served as the Associate Director of the Center for Family Business.

Professor Filbeck has authored or edited eleven books and published more than 100 refereed academic journal articles appearing in the *Financial Analysts Journal*, *Financial Review*, and *Journal of Business, Finance, and Accounting* among others. He serves on the editorial board of the *Journal of Business and Economic Perspective*.

Professor Filbeck teaches graduate and undergraduate courses in corporate finance and derivatives. He received The Impact on Practice Award from the Black School of Business in 2015, the outstanding teaching award among iMBA faculty in 2010 and 2012, the Penn State Behrend Regents award for Outstanding Researcher in 2011 and was the 2013 recipient of the Penn State Behrend Outstanding Outreach Award. He served as President of the CFA Society Pittsburgh from 2014 to 2018 and was the President of the CFA Society Toledo from 1998 to 1999. He was President of the Southern Finance Association from 2015–2016.

He has a BS (engineering physics) from Murray State University; a MS in Applied Statistics from Penn State University; and holds a DBA (finance) from the University of Kentucky. Besides his work in finance, he holds leadership roles in numerous community organizations.

John Gagliardi, CMT

Regional Vice President Brokerage, Fidelity Active Trader Services



John graduated from New York University with a Bachelor of Arts in Business and Legal Studies. Using a thesis created at NYU’s Stern School of Business, John sold his first company to Barnes and Noble (NYSE: BKS). This concept evolved into the largest retailer of video games, GameStop (NYSE: GME). On Wall St., John began his career working in Convertible Risk Arbitrage on the floor of the NY Stock Exchange. During the internet revolution, John was a pioneer of Direct Access technology and trained professional traders. John is highly proficient in market mechanics, sector research, ETF’s, options, fixed income, fundamental analysis and earned his designation as a Chartered Market Technician. He has lectured to individual investors nationwide as a keynote speaker for the Money Show, NY Traders Expo and Traders Summit. Today, John can be on Yahoo Finance and Cheddar.com as a regular guest every Friday morning. John has been with Fidelity Investments since 2004.



C. Thomas Howard, Ph.D.

CEO & Chief Investment Officer of AthenaInvest

C. Thomas Howard, Ph.D. is the CEO and Chief Investment Officer of AthenaInvest and the architect of the unique methodology that underlies Athena's patented behavioral investment approach. Building upon the Nobel Prize winning research of Daniel Kahneman, Tom is a pioneer in the application of Behavioral Finance to investment management and the author of the book, *Behavioral Portfolio Management*. Dr. Howard is a Professor Emeritus at the Reiman School of Finance, Daniels College of Business, University of Denver. As a well-known thought leader in Behavioral Finance, Tom speaks at national industry conferences and is often featured in major publications.



Stavros Iatridis

President & CEO, Vestmo Global Research, Inc.

Stavros Iatridis is President & CEO of Vestmo Global Research, Inc. Mr. Iatridis has over 35 years of institutional investment experience as a global multi-asset portfolio manager with leading asset management and hedge fund companies.

He founded Vestmo Global Research to specialize in developing technology-based global investment research and strategies covering a wide range of asset markets. Mr. Iatridis co-founded Apogee Global Advisors in 2002, an investment firm specializing in hard asset portfolios. Previously, he worked as a portfolio manager with several leading long/short global equity hedge funds (Noble Partners and Odyssey Partners) starting 1994. Prior to that, Mr. Iatridis was a partner and international equity/fixed income portfolio manager with Oechsle International Advisors, a \$6 billion international asset manager, working in both the Tokyo and Boston offices. Mr. Iatridis began his career in 1985 as an international research analyst at Putnam Investment Company in Boston.

Mr. Iatridis earned an MBA degree in International Business from George Washington University and a BA in Philosophy & Economics from Boston College.



Craig W. Johnson, CMT, CFA

Senior Technical Research Analyst, Piper Jaffray

Craig W. Johnson, CMT, CFA is a Managing Director and Senior Technical Research Analyst currently directing Piper Jaffray's technical research group. Johnson joined Piper Jaffray in 1995 as an analyst in the firm's private client research department. He offers frequent technical commentary on the broader market and individual stocks.

Craig earned his Bachelor's degree with an emphasis in finance and marketing and his M.B.A. from Drake University. Craig holds the Chartered Financial Analyst and Chartered Market Technician designations and is an active member of the Twin Cities Society of Securities Analysts and Chapter Chair of the Minnesota Chapter of CMT Association. He is also a former President of the CMT Association.



John Kolovos, CMT, CFA

Head of Technical Strategy, Macro Risk Advisors

John Kolovos is Head of Technical Strategy at Macro Risk Advisors. In this role, John is responsible for delivering high conviction investment insights, identifying tactical trading opportunities and analyzing cross asset relationships between stocks, commodities, currencies and interest rates from across the globe. John has been one of Wall Street's most sought after macro-based analysts over the last 20 years, working alongside some of the industry's most legendary investors.

Prior to joining MRA, John spent the early part of his career at Lehman Brothers and then International Strategy & Investment (ISI) Group, where he regularly published technical and macro strategy reports to institutional investors in a focused and unbiased manner. Later, John moved to Boston joining Fidelity Investments as vice president and senior global technical strategist, working side by side with domestic and international portfolio managers.

A member of the CFA Society of Boston, and dual CFA and CMT Charterholder, John has been frequently quoted in the financial press. An avid guitar player and golfer John is best known for being an integral part of the investment process for those around him by integrating his knowledge and years of experience with systematic processes based on trend, momentum and relative strength.



Rick Lehman

Rick Lehman is an Adjunct Professor of Behavioral Finance at UC Berkeley Extension and at Golden Gate University. He is also the Founder of BehavioralFinance.com. His financial career spans more than thirty years, beginning with an eleven-year stint on Wall Street with EF Hutton, Thomson McKinnon, and the New York Stock Exchange. His prior financial career spans more than thirty years beginning with an eleven-year stint on Wall Street with EF Hutton and the New York Stock Exchange. He later worked for several financial data companies, a startup with the first on-demand reports on public companies, and a bank wealth management department, in addition to having his own RIA.

Rick has been a devoted market technician for three decades, launching from technical indicators into the behavioral science behind them and then publishing a book, *Far From Random*, on the relationship between technical analysis and behavioral finance. He also published two books on Options.

Rick holds a BS in Management Engineering from Rensselaer Polytechnic Institute in Troy, New York, and an MBA in Finance from the State University of New York at Albany.

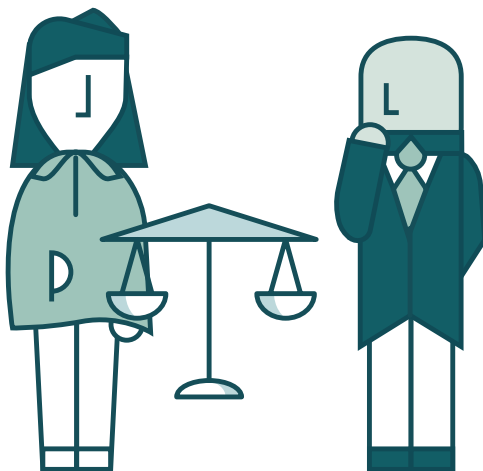


Clare Flynn Levy

Founder & CEO, Essentia Analytics

Clare Flynn Levy is the Founder and CEO of Essentia Analytics, a behavioral data analytics service that helps professional investors make measurably better investment decisions. Prior to founding Essentia, Clare spent 10 years as a fund manager, both active equity (running over \$1B of pension funds for Deutsche Asset Management) and hedge (as founder and Chief Investment Officer of Avocet Capital Management, a specialist tech fund manager). She ultimately “went native” into the software space as President of Beauchamp Financial Technology, a market-leading provider of portfolio management systems to hedge funds, which was acquired by Linedata Services S.A.

She also serves as a non-executive director of Leathwaite, a global financial services human capital search and consulting practice. Clare holds a BA from Barnard College.





Louis Llanes, CMT, CFA

Founder & Managing Principle, Wealthnet Investments

Louis Llanes is a technical analyst and the Founder & Managing Principal of Wealthnet Investments, LLC. Wealthnet is an asset management and research firm. In 1997, Louis founded Blythe Lane Investment Management and later merged the firm with Centric Investment Group, which became Wealthnet Investments, LLC.

He also served as a Senior Portfolio Manager for the US Bank Private Client Reserve, and an Investment Consultant for Kemper Securities. Early in his career he worked as a Financial Analyst for Intellogic Trace, a spin-off of DataPoint, and as a Quantitative Analyst.

Louis holds the Chartered Financial Analyst (CFA) and Chartered Market Technician (CMT) designations. He earned an MBA at the University of Denver and a B.S. in Finance from the University of Colorado in Denver. Louis is a contributing author in *The Handbook of Risk* published by John Wiley, and has written white papers about investment management issues for practitioners. Louis has held chair positions on the board for the Colorado chapter of the Institute for Chartered Financial Analysts and the CMT Association.



Trevor Neil, MSTA, MCSI

Director, RRG Research & Founder of the BETA Group

Trevor Neil is a Director of RRG Research BV. He is considered Europe's leading Quantitative/Technical Analysis expert who has spent over 40 years in the financial industry.

Trevor began his career as a soft commodity floor trader for Merrill Lynch in 1974. Since then, he has developed his skill as a futures fund manager and professional technical analyst. He has worked on the floor of LIFFE giving short-term technical analysis support for a large group of arbitrageurs in the Bund pit, was a Hedge Fund Manager at T-Capital, and managed a successful futures quoted fund at Union CAL Limited. Trevor served four years as the celebrated global head of technical analysis at Bloomberg being responsible for training and technical analysis software development on the Bloomberg terminal. In 2004, Trevor founded the BETA Group - Behavioral Economics and Technical Analysis - which offers consultancy to banks and funds around the world, as well as offering seminars to professionals in the industry.

Trevor has had several articles published on trading techniques, is a well-known and sought-after teacher of the practical application of market timing skills, and has appeared on CNBC, Bloomberg, IG TV and Core television. He also delivers the popular monthly webinar, Trevor Neil's Technical Analysis Surgery, which is sponsored by Thomson Reuters.

He was a founding board member of The Society of Technical Analysts in the UK and was involved in the creation of the IFTA professional qualification CFTe. Trevor Neil is from Glasgow, Scotland. He was educated at Gloucester House, then Portora Royal School in Enniskillen, Northern Ireland.



George L. Noble

George Noble brings 35 years of investment experience to the asset management business. He began his career at Fidelity in 1981 and in 1984 was chosen to run Fidelity's first international equities product, the Fidelity Overseas Fund. In the first year of operations, the fund was ranked the number one mutual fund in the country. In addition, during his tenure as manager of the Overseas Fund, from 1984 until January 1991, the Fund ranked first in performance among all international funds tracked by Lipper Analytical Services, Inc. and ranked second among all mutual funds.

George entered the hedge fund business in 1991 with the launch of Teton Partners, a global long/short equity hedge fund. Teton was one of the earliest global hedge funds to exceed \$1 billion in assets under management. In 1996, Mr. Noble returned capital to investors in order to spend more time with his family.

In 2005, George launched Gryfalcon, a global long/short equity fund. In 2009, Mr. Noble returned capital to investors in order to manage family capital.

George holds a BA from Yale University and an MBA from The Wharton School, University of Pennsylvania.



F. Thomas O'Halloran, J.D., CFA

Director & Portfolio Manager, Lord Abbett

F. Thomas O'Halloran is the Director and lead Portfolio Manager responsible for managing the firm's small cap growth, micro-cap growth, and growth equity strategies.

Mr. O'Halloran joined Lord Abbett in 2001 as a Research Analyst. He assumed full-time responsibility for managing Lord Abbett's small cap growth strategy in 2003. In that year, he also was named Partner. Prior to joining Lord Abbett, he was an Executive Director/Senior Research Analyst at Dillon Read & Co. Inc. and its acquirer, UBS. He began his career in the financial services industry in 1987.

Before beginning his career in the financial services industry, he was a trial lawyer, which included work as a criminal prosecutor for the State of Rhode Island.

Several publications, including The Wall Street Journal, have interviewed Mr. O'Halloran for his insights on current market trends and his perspective on small cap growth investments. He also has been profiled in Investor's Business Daily and Barron's.

Mr. O'Halloran earned an AB from Bowdoin College, a JD from Boston College, and an MBA from Columbia University. He also is a holder of the Chartered Financial Analyst® (CFA) designation.



Irusha Peiris, CMT

Manager, MarketSmith

Irusha Peiris, CMT began trading stocks early in his career while working at Fidelity Investments. After reading Bill O'Neil's 24 Essential Lessons for Investment Success, Peiris began successfully using IBD's CAN SLIM® Investment System. In 2009, Peiris joined MarketSmith®, an online equity research platform from Investor's Business Daily®, as a product coach personally teaching customers how to maximize their investment research. He was promoted to manager of the MarketSmith team in 2015, and now hosts educational webinars and serves on the MarketSmith product development team.

Peiris regularly speaks at investing events and has been a guest speaker on IBD's How to Make Money in Stocks radio show. His 15 years of investing experience are complemented by his education which includes, a B.S. from Tufts University and an M.B.A. from the University of Southern California. In addition, Peiris has an M.S. in Investment Management from Boston University and holds a Chartered Market Technician designation from the CMT Association.



Nick Radge

Head of Trading & Research, The Chartist

Nick Radge is Head of Trading & Research at The Chartist (Australia) and TradeLongTerm.com. Nick is a professional trader, educator and author who has been trading since 1985. During this time Nick has worked for international investment banks - from the trading floor of the Sydney Futures Exchange to International dealing desks in Sydney, London and Singapore.

Nick's expertise lies in trading system design and technical analysis with a particular focus on momentum investing and trend following strategies. Nick also runs an intensive Trading System Mentor Course, teaching students to design and code their own trading strategies. You can learn more about Nick at www.thechartist.com.au and www.tradelongterm.com



Scott Richter, CMT, CFA, CHP

Senior Portfolio Manager, Westfield Group Insurance

Scott Richter, CFA, CMT, CHP is a senior portfolio manager for Westfield Group Insurance, which manages over \$4B in AUM. He is the lead portfolio manager for alternative assets and is also responsible for investments in the energy and utility sectors. He was formerly the co-manager of Fifth Third Asset Management's Large Cap Value Strategy. Prior to Fifth Third, he was a founding partner of Weber Fulton Felman Investment Counsel.

He is a graduate of the University of Rochester and Harvard's Graduate School of Business. He has been a guest/contributor to CNBC, Fox Business, Bloomberg, Barron's, and Reuters. He has been a member of the CMT Association since 2000 and a board member since 2013. Scott now serves as President of the CMT Association.



Barry Ritholtz

Chairman & CIO, Ritholtz Wealth Management

Barry Ritholtz is the Chairman & Chief Investment Officer of Ritholtz Wealth Management. Launched in 2013, RWM is a financial planning and asset management firm, with \$825 million in assets. The firm offers a variety of services to the investing public.

Barry was named one of the 15 Most Important Economic Journalists in the United States, and has been called one of The 25 Most Dangerous People in Financial Media. Barry is the host of Bloomberg's Masters in Business podcast series, and he writes a daily column for Bloomberg View as well as a twice-monthly column on Personal Finance and Investing for The Washington Post. He was previously the author of the popular Apprenticed Investor columns at TheStreet.com.

One of the few strategists who saw the the coming housing implosion and derivative mess far in advance, Barry issued warnings about the market collapse and recession in time for his clients and readers to seek safe harbor. Dow Jones Market Talk noted that "many market observers predict tops and bottoms, but

few successfully get their timing right. Jeremy Grantham and Barry Ritholtz sit in the latter category.” His observations are unique in that they are the result of both quantitative data and behavioral economics.

Barry is a frequent commentator on economics and financial markets, and has appeared as a regular guest in several major media outlets. He has been profiled in the Wall Street Journal’s Quite Contrary column (August 3, 2004; Page C3), and was the subject of several Barron’s interviews (December 8, 2008 and October 26, 2010). He was honored to be the dedicatee of Stock Trader’s Almanac’s 40th Anniversary edition in 2007 and the Yahoo Tech Ticker’s Guest of the Year in 2009.



Michael Santoli

CNBC Senior Markets Commentator

Michael Santoli joined CNBC in October 2015 as a Senior Markets Commentator, based at the network’s Global Headquarters in Englewood Cliffs, N.J. Santoli brings his extensive markets expertise to CNBC’s Business Day programming, with a regular appearance on CNBC’s “Closing Bell” (M-F, 3PM-5PM ET). In addition, he is the host of “Trading Nation” and contributes to CNBC.com and CNBC PRO, writing regular articles and creating original digital videos.

Previously, Santoli was a Senior Columnist at Yahoo Finance, where he wrote analysis and commentary on the stock market, corporate news and the economy. He also appeared on Yahoo Finance video programs, where he offered insights on the most important business stories of the day and was a regular contributor to CNBC and other networks. Santoli has covered the Wall Street beat for more than 20 years. Prior to joining Yahoo in 2012, he spent 15 years as a columnist and feature writer for Barron’s magazine. From 1993 to 1997, Santoli was a reporter at Dow Jones Newswires, covering the securities industry, and was awarded two Dow Jones Newswire Awards for distinguished real time journalism. He began his journalism career in 1992 as a reporter and editor at Investment Dealers’ Digest. Santoli is a graduate of Wesleyan University and lives in New York City. Follow Michael Santoli on Twitter @michaelsantoli.



Todd Sohn, CMT

Director of Technical Analysis, Strategas Securities

Todd Sohn is a Director on the Technical Analysis team at Strategas Securities, a global institutional brokerage and advisory firm. Strategas provides macro research, capital markets, corporate advisory services, and financial products to institutional investors and corporate executives in more than twenty countries around the world. Todd contributes to the regularly published Technical Strategy reports and actively works with the firm's clients to provide bespoke portfolio analysis. Prior to joining Strategas, Todd worked at JPMorgan and SAC Capital Advisors.

Todd has an MBA from Fordham University and holds a degree in Finance from Syracuse University. Todd has earned the Chartered Market Technician designation from the CMT Association and is proud to have completed 4 marathons.



Cody Tafel, CMT, CAIA

Senior Equity Trader, Thompson Siegel & Walmsley (TSW)

Cody Tafel, CMT, CAIA is the Senior Equity Trader for TSW (Thompson, Siegel & Walmsley), a multi-billion dollar Richmond, Virginia based registered investment advisor. He serves as Past President of the TA Educational Foundation and has taught technical analysis in the Robins School of Business at the University of Richmond, as well as guest lectured at Penn State University, Lynchburg College, and the University of Virginia.

Cody was previously the Director of Trading for Rapidan Capital LLC and the head trader for Shockoe Capital Partners, a long/short equity hedge fund where he managed proprietary capital and began developing systematic trading programs.

Cody studied the Turtle Trading Method with an Original Turtle in 2005 and is a member of the CMT Association and the Chartered Alternative Investment Analyst Association. He earned his CMT designation in 2007 and CAIA designation in 2013 and holds a BA in economics from the University of Virginia.



Blaze Tankersley, CMT, CFA

Founder, 3|5 Global

Blaze Tankersley, CMT, CFA is the Founder of 3|5 Global. Blaze has over 25 years of experience working in various roles on Wall Street, from analyst to global strategist, and has worked alongside the most adept long-term investors on Wall Street. He credits his time spent working directly with legendary value investor Seth Glickenhau as the most formative of his career and the backbone of his hybrid analytical approach. Seth taught us that, “It is not a stock market, it is a market of stocks,” and we evaluate each on its own merits.



Jason Voss, CFA

CEO, Active Investment Management

Jason Voss, CFA is CEO of Active Investment Management (AIM) Consulting, LLC. Most recently, he was Director of Content for the CFA Institute and its 150,000+ global members. Previously, he was the co-Portfolio Manager of the Davis Appreciation & Income Fund which during his tenure bested the S&P 500 by more than 40%, earned a Lipper #1 ranking, and was one of Morningstar’s first ten mutual funds given a Stewardship Grade of “A.” Jason is the author of 14 publications, including *The Intuitive Investor*, and well over 1,000 articles on investing, including for *Journal of Private Equity*, *Journal of Behavioral Finance*, *The Enterprising Investor*, *Seeking Alpha*, and many other platforms. In 2014 he was named one of Global CEO’s Top 100 CSR Leaders, and is a frequent researcher on ESG issues.

Jason is also co-Founder of The Sarasota Institute: a 21st Century Think Tank, along with Phil Kotler, the father of modern marketing, and David Houle, one of the forces behind the creation of MTV, CNN, *Headline News*, and Nickelodeon. He serves on several boards, including the Framework Panel of the International Integrated Reporting Council. Jason received his BA in Economics, Minor BA in History, and MBA, Finance and Accounting, from the University of Colorado. He has traveled to 39 countries, with Egypt, Peru, and Myanmar being favorites.



Mathew Verdouw, CMT, CFTe

CEO, Optuma

Mathew Verdouw, CMT, CFTe, has been living and breathing Technical Analysis for over 21 years. As a Computer Systems Engineer, he wrote his own TA platform—which has been used all over the world from private traders to major US firms. More recently, Mathew has become the only person in the world to currently teach the latest curriculum of all three levels of the CMT program. His broad exposure to Technical Analysis and his engineering background has led to many new insights and brand-new ways to model analysis.

Mathew is a staunch believer that there are still many new discoveries to be made in the area of Technical Analysis “TA’s best days are ahead of us, not behind us”.



Brett Whyssel

Co-Founder, Decision Fish, LLC

Brett Whyssel is a recovering investment banker who co-founded Decision Fish LLC in 2016 to provide uniquely effective financial wellness programs, coaching and decision consulting. He is an Adjunct Lecturer at the City College of New York MPA program, where he teaches Public Economics and Decision Making and the Capstone. He also teaches Intro to Finance and Managerial Decision Making at Borough of Manhattan Community College.

He contributes to Forbes.com’s leadership channel on behavioral economics, finance, and philosophy. He runs the 1,000 member Behavioral Economics-NYC meetup and is a gallery-exhibited photographer.

Brett earned a BS in Managerial Economics/French from Carnegie Mellon University and an MA in Philosophy from Columbia University.



Felix Zulauf

Founder and CEO of Zulauf Asset Management AG

Felix Zulauf is Founder and CEO of Zulauf Asset Management AG. Felix has spent over 40 years in financial markets and asset management beginning his career as a trader with Swiss Bank Corporation. He also received training in research and portfolio management with several investment banks in New York, Zurich and Paris. In 1977 Felix joined Union Bank of Switzerland as a Portfolio Manager of global mutual funds, became Global Strategist of UBS in 1982 and Head of the Institutional Portfolio Management Group in 1986.

He founded his wholly owned Zulauf Asset Management AG in 1990, a Switzerland-based asset management company and in 2009 Felix sold the majority of the firm and spun off a Family Office. Zulauf Consulting offers proprietary global macro research, covering various topics such as equities, fixed income, credit markets, currencies, commodities, and geopolitical themes. The research has a strategic approach with commentary on both the short-term and medium-term outlook. In addition to offering written research reports, Felix Zulauf provides consulting services to its institutional clients.

Felix can be seen in mainstream media such Barron's Roundtable, Bloomberg and the German press.

Annual Awards

2019 ANNUAL AWARD INSCRIPTIONS

Annual Award

The CMT Association recognizes Gerald Appel, creator of the MACD, for his innovative contributions to the discipline of technical analysis that have shaped a generation of trend-following investors.

Service Award

The CMT Association honors Mark Cremonie for selfless service to the CMT Program Curriculum and Test Committee. As a colleague and mentor, he has been instrumental in propelling the CMT Program forward.

Memorial Award

In honor of his long service to the profession of technical analysis in general and to the CMT Association in particular. As CMT Association President, he guided the Association through its transition to a more business-like organization. As head of Lowry's Research, he continued and expanded one of the most respected and time-tested technical analysis research products in the world.

The Charles H. Dow Award

The CMT Association grants the 2019 Charles H. Dow Award to Christopher Diodato for his paper Making The Most Of Panic - Exploring The Value Of Combining Price & Supply/Demand Indicators. The paper has been recognized for its holistic approach to combining indicators and time frames to identify periods of market panic.



Annual Award Winner

Gerald Appel

Gerald Appel is the inventor of MACD, the Moving Average Convergence/Divergence indicator that is still widely used by technical analysts 40 years after he developed it. He also founded the investment newsletter *Systems and Forecasts* in 1973, which is in its 46th year of publication. His approach to technical analysis is rigorously quantitative and systematic, validated by long-term historical studies.

Mr. Appel also managed money for clients for more than 35 years before retiring in 2012. The firm he founded, Signalert Asset Management, still utilizes his approaches and insights, using quantitative technical analytic tools to reduce risk.

Over the years Mr. Appel has written 17 investment books that have been translated into numerous languages, as well as producing two videos on trading. The *Stock Trader's Almanac* designated two of his books as "Investment Book of the Year." He has contributed articles for numerous publications including *Barron's*, *Money Magazine*, *Smart Money*, *Boardroom Reports*, *Stocks and Commodities*, and has appeared as a guest on Louis Rukeyser's *Wall Street Week*, among other television appearances. He has been cited by numerous publications including a full-length feature in the *New York Times*, the *Wall Street Journal*, *Futures Magazine*, *Forbes*, *The Commodity Trader's Consumer Report*, *Timer Digest* and the *Hulbert Financial Digest*.

Photography started out as a hobby but soon developed into a passion. With his drive to succeed, he became a serious and active photographer. Mr. Appel has won numerous awards and has published five photography books.

<https://cmtassociation.org/presenter/gerald-appel/>



Service Award Winner

Mark Cremonie, CMT, CFA

Mark Cremonie, CMT, CFA, graduated from Indiana University with a BA in Biology and an MBA in Finance. He spent 37 years as a buy-side equity analyst and portfolio manager following a trend and momentum approach combined with strong earnings momentum. He has been actively involved in the CMT program for the past 17 years, first helping Brad Herndon put together the exam as a Subject Matter Expert, and for the past 6 years as a member of the Curriculum and Test Committee (formerly known as the Board of Governors.) Mark chaired the Committee for three-and-a-half years, working closely with different CMT Program Directors and Executive Directors as well as Craig Johnson to drive the adoption of the new curriculum strategy. Mark enjoys cooking, working out and shooting pool.

<https://cmtassociation.org/presenter/mark-cremonie-cmt-cfa/>



Memorial Award Winner

Paul F. Desmond

Paul F. Desmond served as the President of Lowry Research Corporation, the oldest continuously published advisory firm in the nation, until his passing in 2018. Paul joined Lowry in 1964 as Director of Research and advanced to President and owner in 1972. Over the course of nearly 50 years, he earned the distinction of being regarded in the industry as the Dean of Supply/Demand analysis. About 85% of the subscribers to the Lowry Analysis are professional investors, including some of the largest hedge funds and private investment counseling firms in the world.

Lowry Research, founded by L. M. Lowry in 1938, has been an enduring part of stock market analysis for more than 80 years because its analysis is a very basic study of the forces of Supply versus Demand, the starting point of all economic analysis. Lowry Research publishes two interactive websites: Lowry onDemand, covering all stocks registered for trading on the New York and NASDAQ Exchanges, as well as Lowry Global, covering 24 major

equity markets throughout the Americas, Asia, and Europe.

From 1972 to 1990, Paul also served as the founder and Chairman of Lowry Management Corporation, an S.E.C. registered Investment Adviser and portfolio manager overseeing approximately \$400 million in clients accounts. During that same period, he was also the founder and Chairman of Lowry Financial Services Corporation, a registered broker dealer, subsequently acquired by Pacific Mutual Life Insurance Co.

Paul served as President of the CMT Association from 1997 to 1999. He was also a founder of the American Association of Professional Technical Analysts (AAPTA). In 2002, Paul was the recipient of the Charles H. Dow Award for his original ground-breaking research entitled "Identifying Bear Market Bottoms and New Bull Markets." In 2009, he was honored as The Technical Analyst of the Year by The Technical Analyst Magazine of London. In addition, Lowry Research was honored as the Best Equity Research and Strategy for 2009, 2010, and 2012 by The Technical Analyst Magazine of London.

Paul has authored several widely read white papers on the analysis of market trends, as well as being featured in multiple books. He has been featured in a number of formal interviews in Barron's Magazine, the Wall Street Journal, Money Magazine, Marketwatch, and a wide variety of other financial publications. He has also been a frequent guest on CNBC and Bloomberg Television.

<https://cmtassociation.org/presenter/paul-desmond/>



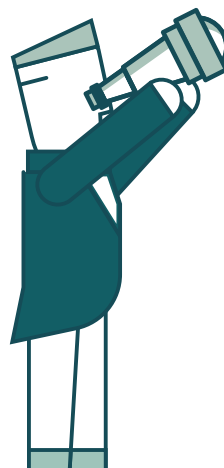
2019 CHARLES H. DOW AWARD



Charles H. Dow Award Winner

Chris Diodato, CMT, CFA

Chris Diodato, CMT, CFA became a student of technical analysis at a young age, enrolling in the CMT program during his freshman year of college. Since then, he attained his CMT and CFA charters and worked in various research and portfolio management roles. Currently, Chris is the Senior Portfolio Manager at Cantilever Wealth Management in Pittsburgh, PA where he leads the development and implementation of cutting-edge investment offerings. He maintains a holistic investment philosophy, incorporating technical, fundamental, and quantitative methods in his work and is always hungry to learn more about financial markets. He is especially appreciative of his mentors, family, and friends who have supported him on his journey to become a financial professional.



Making The Most Of Panic – Exploring The Value Of Combining Price & Supply/Demand Indicators

by **Christopher Diodato, CMT, CFA**

Since the dawn of investing, practitioners understood the value of contrarianism. All too often, emotions, not fundamentals, become the driving force in stock and cause dislocations. Extremes in sentiment – whether that be excessive optimism or pessimism – have been associated with market dislocations such as the housing bubble, Bitcoin’s behavior in 2017, and the stock market crash of 1987 (known as Black Monday). For those willing to buck the herded animal spirits associated with investors’ mentality during extreme events, there are profits, and often very large profits, to be had.

Technical analysts, many of whom are contrarian by nature, understand this and have endeavored to identify periods of panic and capitulation in an effort to buy securities at deeply discounted prices. In the Far East, candlestick charting tried to identify panic over three-hundred years ago. In the early 1900s, Richard Wyckoff had helped coin the phrase “selling climax” while conceptualizing the idealized “market bottom” price pattern.

The quest to profit from panic continued. In the spirit of contrarian thinking, analysts

created oscillators to uncover “overbought” and “oversold” conditions in the 1950s onward to help determine if an issue had moved too far, too fast. Shortly following the rise of the various “price oscillators,” some analysts chose to look at supply and demand factors – namely volume and breadth. Some of the latest successful attempts to identify periods of panic and major reversals using supply and demand came in the form of “90% upside and downside days” from Paul Desmond and Martin Zweig’s “breadth thrust indicator.”

Supply/demand analysts had worked under a generally unfamiliar, but important premise –panic can be measured using breadth and volume instead of price momentum (oscillators). Additionally, one could use such indicators to identify buying opportunities which price momentum indicators may not have found. In this report, we will quickly examine the track record of one of the oldest oscillators, and then propose some new methods to use jointly with price oscillators to identify periods of panic.

Part I

Short-Term Indicators

Price-Only Oscillators

With the proliferation of oscillators over the past seventy years, it comes as little surprise that many charting software packages include well over 100 oscillators to help identify overbought and oversold conditions. For our purposes here, we will study just one of the most well-known oscillators – the “slow stochastic,” popularized by George Lane. The slow stochastic, like many price momentum indicators, compares a security’s current price to past prices over a pre-specified time period. Overbought readings occur when the current price is near the top of that range over that time period, and oversold readings appear when the current price is near the bottom of that range. One can see an example of the slow stochastic in the appendix. For this paper, oversold conditions will correspond to indicator readings of 20 or lower, and overbought conditions will be associated with readings of 80 or higher. Below, we’ll see if buying an oversold issue delivers better returns than a non-oversold issue. The tests will be run across daily data for the following data sets:

- The S&P 500 Index and NASDAQ Composite
- The current five largest stocks by market capitalization in the Dow Jones Industrial Average (Apple, Microsoft, JPMorgan Chase, Johnson & Johnson, and ExxonMobil)
- The continuous commodity futures price indexes for gold, crude oil, and copper

FIGURE 1. Stochastic Test #1: Returns Following Overbought/Neutral Readings (1/1990-10/2018)

Asset	# of Overbought/ Neutral Readings	5-Day Return	10-Day Return	20-Day Return
S&P 500	6372	0.12%	0.30%	0.58%
NASDAQ Composite	6234	0.22%	0.49%	0.96%
Apple	6025	0.62%	1.22%	2.46%
Microsoft	6118	0.38%	0.87%	1.70%
JP Morgan	6078	0.18%	0.43%	0.79%
Johnson & Johnson	6167	0.19%	0.41%	0.87%
ExxonMobile	6197	0.07%	0.23%	0.46%
Gold Futures	5622	0.10%	0.17%	0.34%
Crude Oil Futures	5825	0.11%	0.26%	0.74%
Copper Futures	5527	0.07%	0.32%	0.38%

Now, we can look at returns following oversold readings to determine if buying oversold issues is a more profitable strategy.

FIGURE 2. Stochastic Test #2: Returns Following Oversold Readings (1/1990-10/2018)

Asset	# of Oversold Readings	5-Day Return	10-Day Return	20-Day Return
S&P 500	840	0.62%	0.71%	1.57%
NASDAQ Composite	978	0.47%	0.58%	1.01%
Apple	1187	0.24%	0.67%	1.39%
Microsoft	1084	0.85%	0.98%	2.28%
JP Morgan	1134	0.78%	1.10%	2.43%
Johnson & Johnson	1045	0.62%	0.98%	1.60%
ExxonMobile	1014	0.80%	1.01%	1.88%
Gold Futures	1589	0.12%	0.31%	0.64%
Crude Oil Futures	1398	0.64%	0.72%	0.66%
Copper Futures	1623	0.17%	0.05%	0.44%

As conventional wisdom would dictate, purchasing an oversold security will generally deliver better returns versus buying a non-oversold security over a four-week period. In about 17% of cases illustrated here, this was not true, and purchasing a non-oversold security led to superior performance vs. making purchases when oversold conditions were present. This begs the question as to what are the key strengths and weaknesses of price oscillators. Below are a few.

FIGURE 3. Price Oscillator Strengths & Weaknesses

Strengths	Weaknesses
Can be applied to any security with price data	Signals are very dependent on time period used in calculation
Can be tailored to different market conditions	Signals perform poorly in strongly trending markets
	Signals may not occur during panics due to price-dependency and the lagging nature of moving averages

We'll focus on the last weakness - an oversold signal may not register during a market panic, leading to missed opportunities. With this in mind, using supply/demand indicators could help identify opportunities which would have otherwise been missed.

Supply/Demand Indicators - Short Term

The first supply/demand indicator I'll propose is based on the 3-DMA of declining issues (as a % of total issues traded) for the NYSE. Prior to the removal of fractional share pricing in April 2001, such an indicator would be unsuitable, as a relatively high number of unchanged issues would skew the data. With this in mind, we run our tests from 2001 onward. The results of these tests showed that when the 3-DMA of NYSE declining issues exceeded 65%, returns over the next four weeks were significantly higher relative to the historical average. These returns would generally continue to improve as the percentage increased further above the 65% mark. See below for test results from April 2001 to October 2018 using the S&P 500.

FIGURE 4. S&P 500 Average Returns Following 3-DMA % Decline Triggers: 4/2001-10/2018

3-DMA % Declines Threshold	# of Signals	5-Day	10-Day	20-Day
65%	218	0.87%	1.07%	1.97%
70%	94	1.36%	0.75%	2.66%
75%	34	2.07%	1.15%	3.04%
80%	11	3.76%	1.05%	1.98%
Benchmark	4442	0.11%	0.24%	0.48%

As evident in the table above, using such a simple indicator could greatly help investors identify periods of panic in which to execute purchases. This indicator could also help identify periods of panic and short-term oversold conditions at times when traditional price oscillators would not.

A Short-Term Capitulation Oscillator

Continuing to find methods of identifying investor capitulation, one can create an oscillator of % up volume and % advancing issues to fish for market bottoms. I propose the following formulas.

$$\text{Short Term Capitulation Oscillator} = 100 * (\text{Short Term Volume Band} + \text{Short Term Breadth Band})$$

$$\text{Short Term Volume Band} = \frac{10\text{DMA Up Volume}}{(10\text{DMA Total Volume} - 10\text{DMA Unchanged Volume})}$$

$$\text{Short Term Breadth Band} = \frac{10\text{DMA Advancing Issues}}{(10\text{DMA Total Issues} - 10\text{DMA Unchanged Issues})}$$

The average value of this indicator since April 2001 is 103, and the first quintile of indicator values corresponds roughly to 90. We'll call that an oversold threshold. Again, we can plot the average S&P 500 return following a reading of 90 or below and compare it against all returns.

FIGURE 5. Short-Term Capitulation Oscillator Returns Following Declines Below Trigger Levels: 4/2001-10/2018

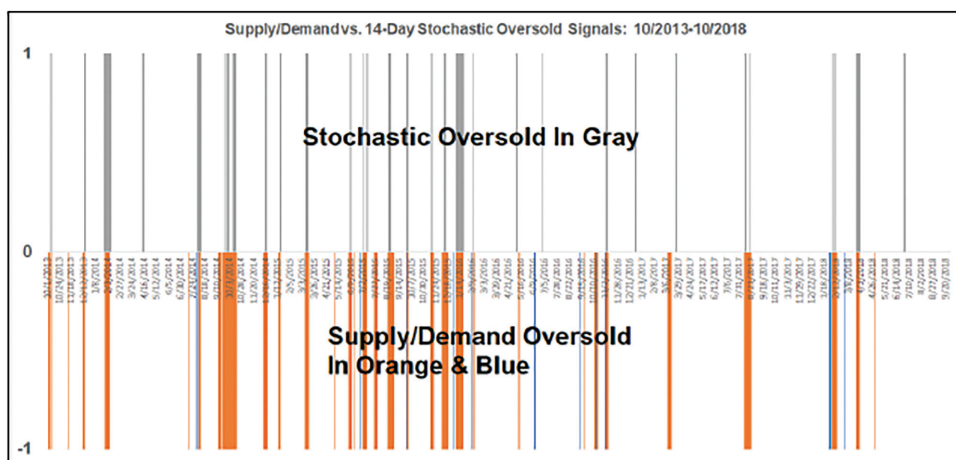
Capitulation Oscillator Threshold	# of Signals	5-Day	10-Day	20-Day
90	679	0.21%	0.38%	0.83%
85	392	0.39%	0.60%	1.44%
80	207	0.80%	1.11%	2.37%
75	95	1.38%	1.29%	3.31%
70	33	1.64%	2.34%	4.81%
Benchmark	4442	0.11%	0.24%	0.48%

As one can see, depressed readings in the short-term capitulation oscillator are generally followed by a period of strong market performance. In the next section, we will extend this indicator's use to longer-term timeframes.

Don't Leave Money On The Table

The objective of this paper was not to propose a suite of indicators which is “better” than traditional price oscillators in use today – it was to address a key weakness of price oscillators. Namely, the weakness is that oversold conditions are often not reached prior to a significant low, meaning no buy signal is registered. Incorporating supply/demand indicators can help prevent investors from missing out on points for new purchases. To drive this point home, here’s a slightly confusing chart.

FIGURE 6. Supply/Demand vs. 14-Day Stochastic Oversold Signals: 10/2013-10/2018



This graph notes when oversold signals occurred over the last five years from the 14-day stochastic (gray), the short-term capitulation oscillator (orange), and the 3-DMA declining issues (blue). Notice that signals from the 14-day slow stochastic are often not accompanied by signals from our supply/demand indicators. This again shows the value in using both price oscillators and supply/demand indicators together to identify market bottoms.

When All The Stars Align – Short Term

One might argue that the best buying opportunities could exist when both a price oscillator and a supply/demand indicator register an oversold condition. Let’s test this idea out. For a buy signal to be registered, the 14-day stochastic needs to be oversold and there needs to be at least one of the two supply/demand indicators we covered at an oversold level. See the results below.

	# of Signals	5-Day	10-Day	20-Day
Stochastic + Supply/Demand Signal	111	1.33%	1.84%	3.35%
Benchmark	4442	0.11%	0.24%	0.48%

Again, another profitable result – albeit relatively few signals to take advantage of.

Part II

Long-Term Capitulation Oscillator

For those curious about modifying the short-term capitulation oscillator for longer-term uses, read below. We could simply extend the time periods used in the formula presented previously (shown below again for reference), but this will cause significant lags in signals because of the nature of moving averages.

Short Term Capitulation Oscillator = 100*(Short Term Volume Band + Short Term Breadth Band)

$$\text{Short Term Volume Band} = \frac{10\text{DMA Up Volume}}{(10\text{DMA Total Volume} - 10\text{DMA Unchanged Volume})}$$

$$\text{Short Term Breadth Band} = \frac{10\text{DMA Advancing Issues}}{(10\text{DMA Total Issues} - 10\text{DMA Unchanged Issues})}$$

Over the years, this issue has been remedied using a variety of methods. Exponential moving averages are probably the most ubiquitous solution. I propose something different, if only for the reason of being easier to explain - an average of averages.

How does this work? Here's an example. We'll take a 10-day moving average (DMA) of say, closing prices, and front weight it by adding the 6- and 4-DMAs to it. Once we add those averages together, we'll take the average of those averages.

$$\text{Front Weighted 10DMA} = \frac{10\text{DMA} + 6\text{DMA} + 4\text{DMA}}{3}$$

This way, the most recent prices in the DMA are weighted three times - once in the 4-DMA, once in the 6-DMA, and once in the 10-DMA. In contrast, the oldest four values are only weighted once - in the calculation of the 10-DMA.

We apply this concept to create the formula for our long-term capitulation oscillator.

Long Term Capitulation Oscillator = 100*(Long Term Volume Band + Long Term Breadth Band)

$$\text{Long Term Volume Band} = \left(\frac{(34\text{DMA} + 55\text{DMA} + 89\text{DMA} + 144\text{DMA} + 233\text{DMA Total Volume})}{5} + \frac{(34\text{DMA} + 55\text{DMA} + 89\text{DMA} + 144\text{DMA} + 233\text{DMA Unchanged Volume})}{5} \right)$$

$$\text{Long Term Breadth Band} = \left(\frac{(34\text{DMA} + 55\text{DMA} + 89\text{DMA} + 144\text{DMA} + 233\text{DMA Advancing Issues})}{5} - \frac{(34\text{DMA} + 55\text{DMA} + 89\text{DMA} + 144\text{DMA} + 233\text{DMA Unchanged Issues})}{5} \right)$$

Because this is a very long-term indicator meant to help identify major bottoms, we will test back to 1961 for the S&P 500. The test will be to see if making purchases at various levels below the tenth percentile of indicator values (roughly 950 and below) give outsized 6-month (125 days), 12-month (250 days), and 24-month (500 days) forward returns.

FIGURE 7. Long-Term Capitulation Oscillator - S&P 500 Returns Following Declines Below Trigger Levels: 1/1961-10/2018

Capitulation Oscillator Threshold	# of Signals	6-Month	12-Month	24-Month
950	1277	4.9%	10.2%	22.5%
925	712	5.8%	12.1%	24.9%
900	587	6.5%	14.8%	28.9%
875	104	15.5%	27.8%	45.6%
850	37	20.9%	32.3%	52.6%
825	12	17.9%	36.9%	48.7%
Benchmark	14422	3.9%	7.9%	16.5%

Low readings in this indicator during a bull market identify attractive intermediate-term buying opportunities. For instance, levels of 931 and 918 corresponded with the correction lows in October 2011 and February 2016. Similarly, one can use this indicator to identify periods of extreme panic during bear markets and potential bear market bottoms. See below for indicator levels at prior bear market lows.

FIGURE 8. Indicator Levels at Prior Bear Market Lows

Bear Market Low Date	Long-Term Capitulation Oscillator Level
6/26/1962	846
10/7/1966	887
5/26/1970	788
12/6/1974	910
2/28/1978	977
4/21/1980	916
8/12/1982	943
12/4/1989	1035
10/9/2002	914
3/9/2009	902

There are two ways an investor can approach this indicator. Longer-term investors may be best served buying below certain threshold levels, understanding they may need to endure additional market volatility and losses before a sustainable low is in place. Investors wishing to take a more tactical approach can use 90% days and/or breadth thrusts to fine-tune their entry.

On a final note, a topic which deserves further research is whether the breadth and volume bands should be weighted according to their relative value. For instance, in some cases the breadth band failed to drop as sharply at market bottoms as the volume band, suggesting it may be less useful than its volume counterpart. One example of this occurrence includes

the 3/11/2003 market bottom (often considered the “test” of the 10/9/2002 bear market low). At this market trough, the raw long term volume band value was at the 5th percentile of all values since 1960, which can be handily considered a panic level. The long term breadth band, however, was closer to the 30th percentile, which is quite a distance from levels associated with panic (relatively strong small cap breadth in much of 2002 likely caused this). This topic deserves further research for both the long and short term capitulation oscillators, and I invite others to experiment with the optimal weights to assign to each band.

Bringing It All Together

Buying during periods of investor panic has been an established tenet of not only technical analysis, but of investing for centuries. Technical analysts were some of the first to try to quantify investor panic – first with price patterns, then oscillators, and then supply/demand indicators. This paper establishes that using a set of price-based indicators alone will inevitably lead to missed opportunities, and proposes a more holistic approach to identify periods of market panic. The studies in this report apply to both shorter-term and longer-term timeframes. Armed with this knowledge, missing out on profit opportunities should be significantly lessened, and the accuracy of identifying new uptrends enhanced.

Appendix

Charts of Various Indicators

FIGURE 9. Crude Oil (\$WTIC) Plotted with its 14-Day Slow Stochastic

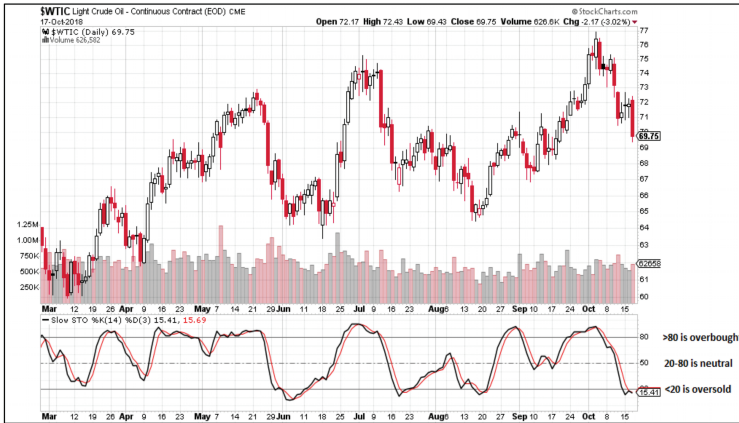


FIGURE 10. Long-Term Capitulation Oscillator from 1961-1979

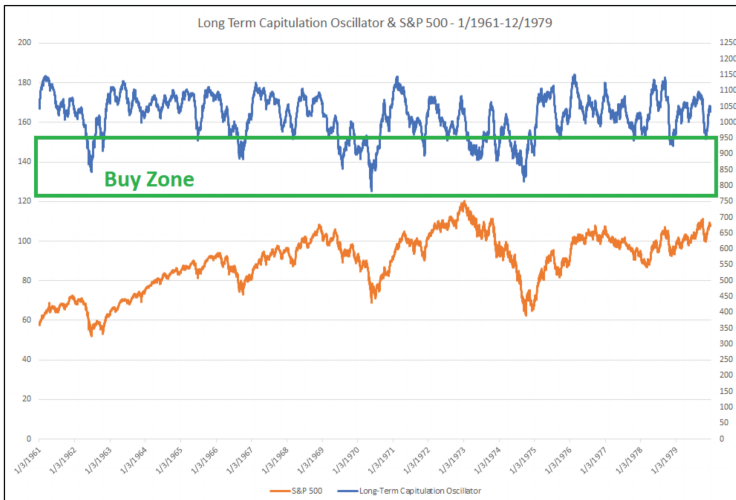


FIGURE 11. Long-Term Capitulation Oscillator from 1980-2000

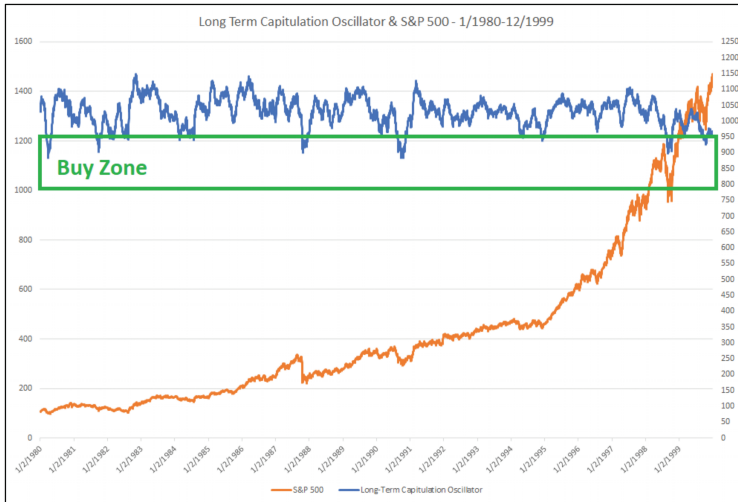


FIGURE 12. Long-Term Capitulation Oscillator from 2000-2018

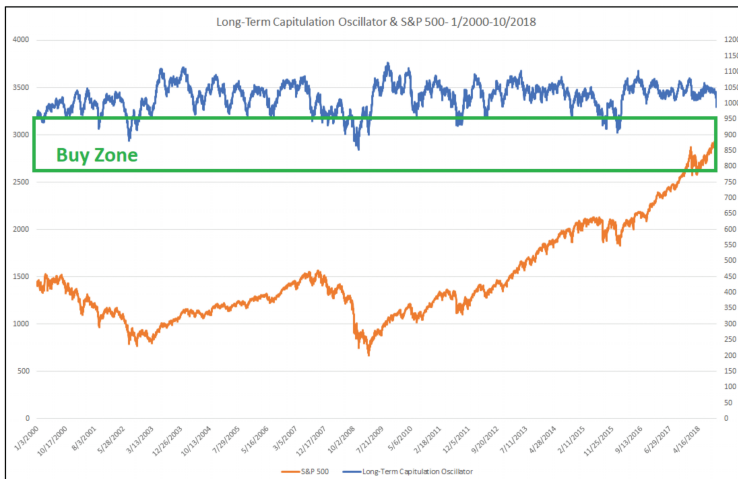


FIGURE 13. Short-Term Capitulation Oscillator from 2007-2012

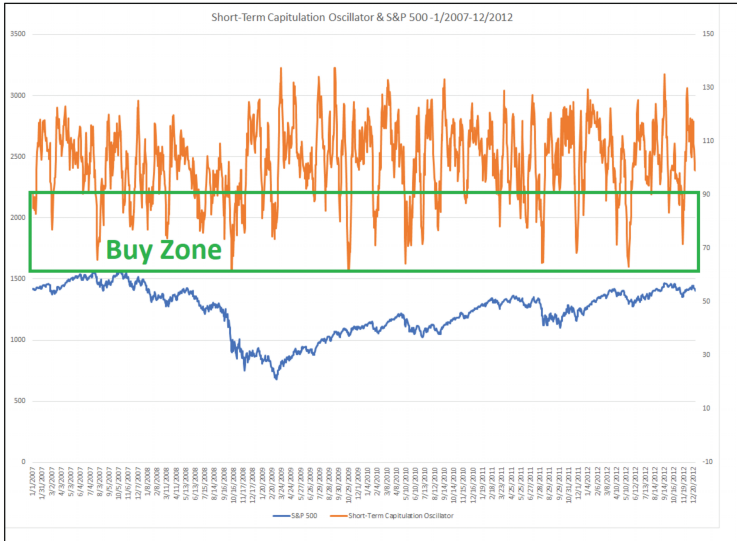
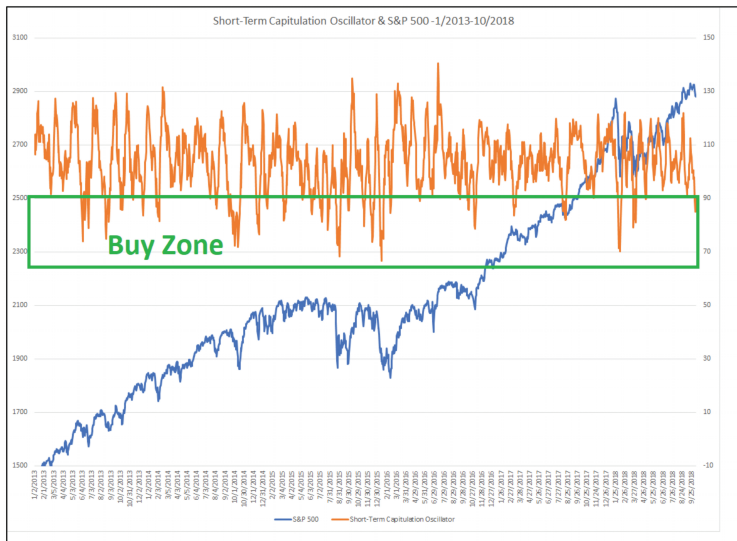


FIGURE 14. Short-Term Capitulation Oscillator from 2013-2018



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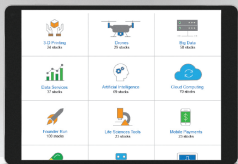
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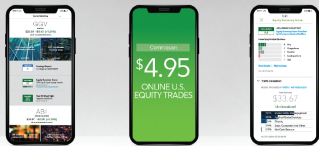
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