

Omega Metrics® Risk Analysis, Market Modes, Trend Analysis and Trading Strategies

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Omega Metrics® Risk Analysis

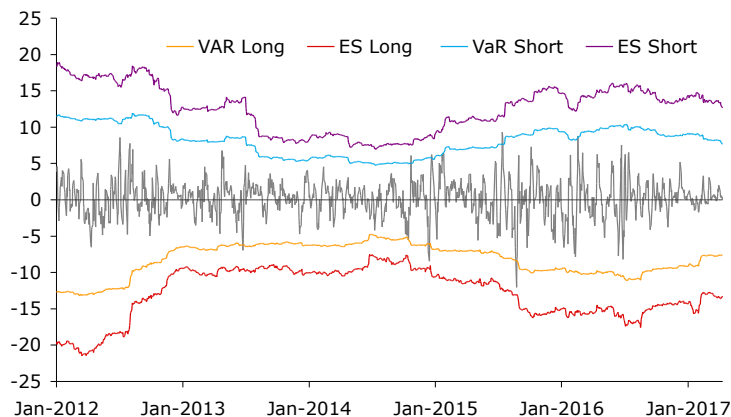
Our proprietary risk measurement technology provides excellent estimates of Value at Risk (VaR) and Expected Shortfall (ES) for daily and multi-day returns.

Because the tails of the distributions of financial returns are very fat, there is a higher probability of a VaR breach falling in the interval between the VaR and the ES than there is of it breaching the ES.

This means that ES is an excellent tool for sizing market exposure.

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Omega Metrics® Risk Analysis



99% VaR and ES for 5-day returns in the CAC 40 Index. In the past 47 years there have been only 8 fewer Long VaR breaches than expected at this probability level.

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Omega Metrics® Risk Analysis

Risk Measurement is the weakest point of modern finance.

Our technology is *not* merely an incremental improvement.

It is a fundamentally new approach which changes what is possible in risk measurement.

This opens a myriad of new opportunities for alpha generation as well as providing unprecedented control of risk for investment managers.

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Omega Metrics® Alpha Capture

Market Modes identify macro opportunities in asset price bubbles, corrections and rebounds.

Risk and Trend Analysis provide sizing and timing signals to profit from the Mode information.

Higher Frequency Trend Trading generates alpha in 'sideways' markets where long or medium term trends are weak.

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Market Modes

Our risk measurement tools reveal regularities and anomalies in market data that were previously unobservable.

We have developed indicators with significant predictive power by the analysis of these effects.

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Market Modes

Market Modes are the statistical fingerprints that identify booms and busts in the U.S. equity market for over a century.

Before and after the creation of the US Federal Reserve system.

Before and after the Gold Standard was replaced by the Dollar.

Before (and almost certainly after) the advent of QE.

The fingerprints are always the same.

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Market Modes

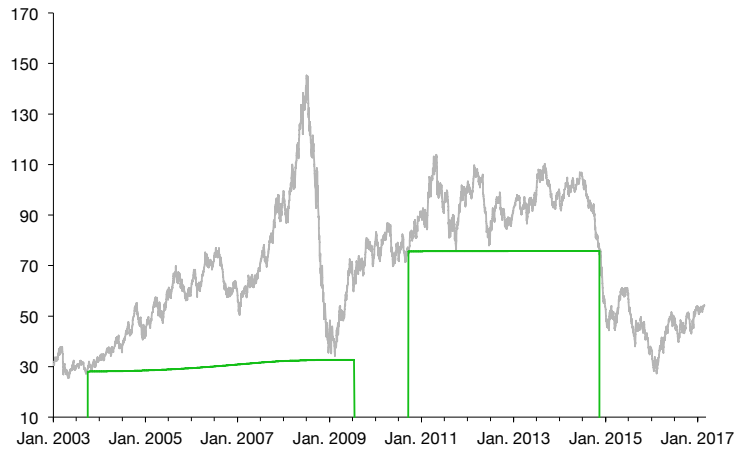
Unstable Expansion Modes are extended periods in which the market is rising but the downside risk of the long position remains higher than that of the short position.

The *Correction Level* is obtained by taking the market level at the time the Unstable Expansion is confirmed and following it at the Risk Free Rate.

Markets with Unstable Expansions which remain uncorrected for long periods are asset price bubbles which almost always crash violently.

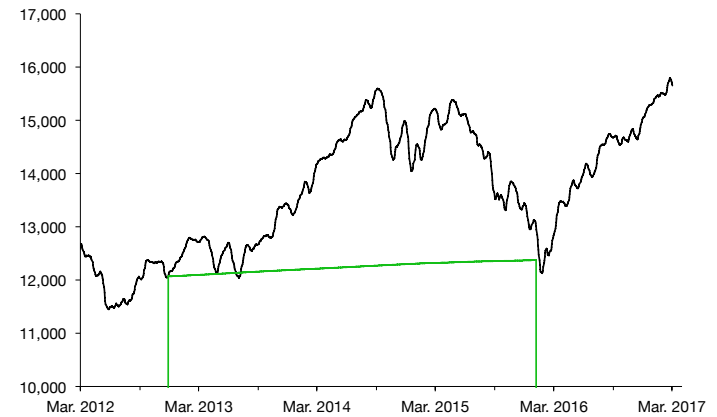
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Predicted Corrections in WTI Oil Prices 2003-2017



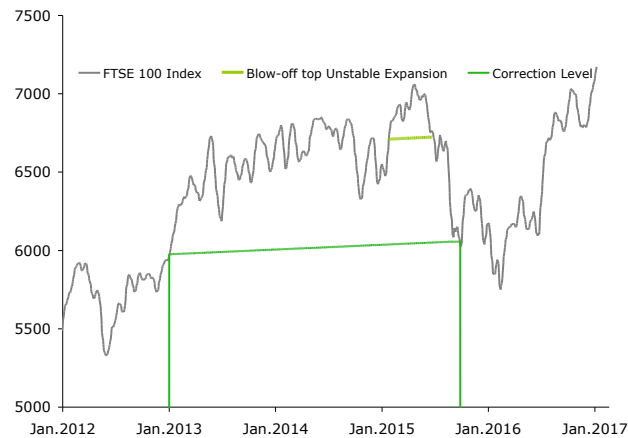
During the Credit Bubble, when WTI peaked at \$145 per barrel a correction to \$33 was predicted. The actual low was \$34. When WTI reached its most recent peak in 2011 a drop

Predicted Corrections in the TSX Composite Index



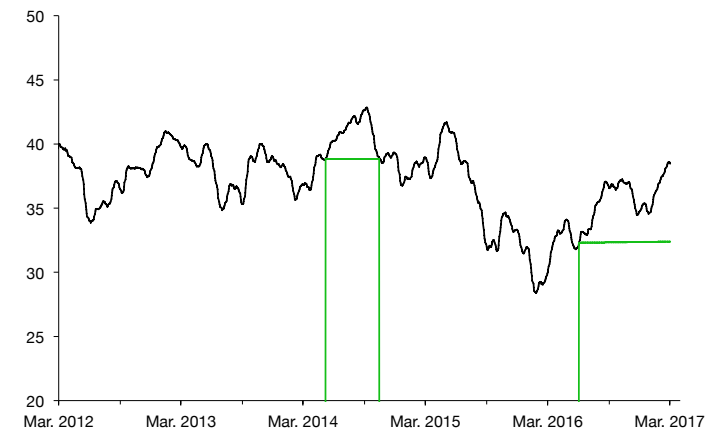
The S&P/TSX Composite Index reached its predicted long-term correction in January 2016

Predicted Corrections in the FTSE 100 Index



Prior to the predicted long-term correction in 2015, the FTSE 100 Index had a 'blow-off top' Unstable Expansion which corrected very quickly.

Predicted Corrections in Emerging Markets



MSCI Emerging Markets ETF (iShares EEM) has been in Unstable Expansion since mid 2016.

Predictive Power Extends to Individual Stocks

Apple began an Unstable Expansion in August 2011.
At Apple's 2012 peak a correction of 56% was predicted.
The price subsequently fell by 53%.

Toshiba grew explosively in 2016. By the end of August it was in Unstable Expansion. Prior to the price collapse in December's accounting scandal a correction of over 30% was predicted.

Carnival Corp. entered Unstable Expansion in October 2016.
The current correction predicted is almost 30%.

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What Happens After the Boom: The Contraction Phase

Unstable Contractions are just Unstable Expansions for the short position.

Unstable Contractions during a downturn are anti-bubbles of panic selling.

They correct as the market becomes over-sold.

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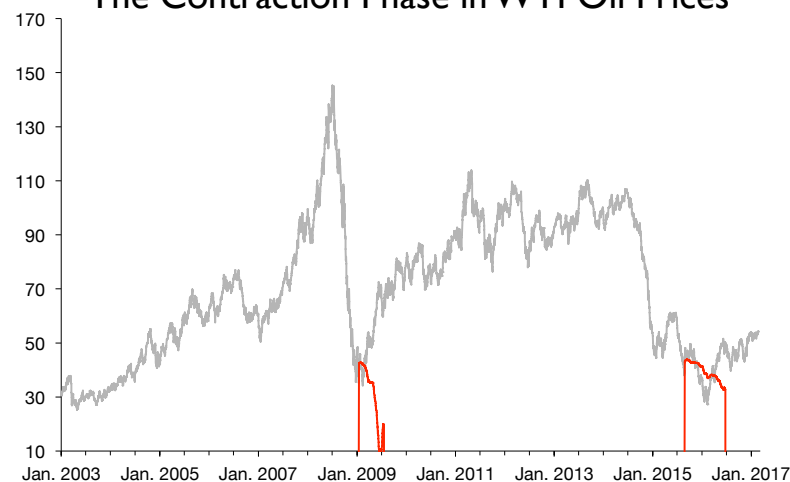
The Contraction Phase

Correction of Unstable Contractions reliably mark the bottoms of US equity market and commodity market busts.

During an Unstable Contraction, the Correction Level is the value the Index will have to rise to in order to complete the correction in the short position.

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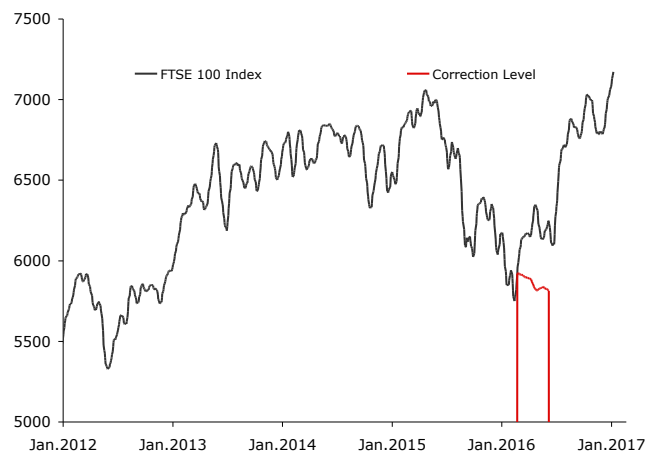
The Contraction Phase in WTI Oil Prices



Unstable Contraction in the WTI Oil price signalled the bottom of the market by mid March 2016, just as it had in July 2009.

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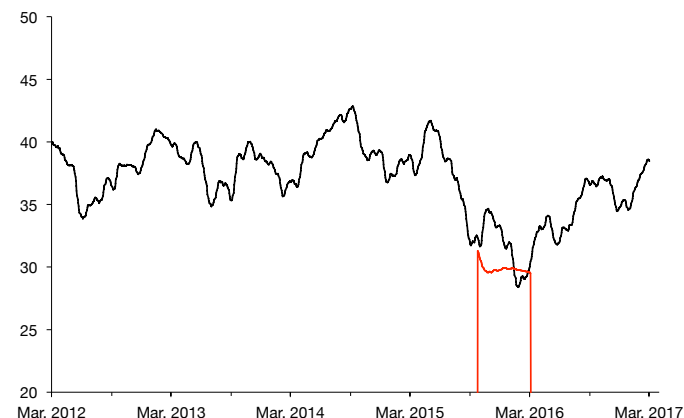
The Contraction Phase in the FTSE 100 Index



Unstable Contraction in the FTSE 100 Index signalled the bottom of the market in Q1 2016 and the subsequent rebound and 'value' phase.

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The Contraction Phase in Emerging Markets



Unstable Contraction in the MSCI Emerging Markets ETF (iShares EEM) signalled the bottom of the market late in Q1 2016 and the beginning of the next 'value' phase.

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Omega Metrics® Risk, Mode and Trend Analysis

Our proprietary trend prediction tools provide information about long, medium and short term market trends.

Long and medium term trends can be combined with Market Modes to take advantage of asset price bubbles, corrections and rebounds.

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Trading Omega Metrics® Risk, Mode and Trend Analysis

Risk Targeting adjusts market exposure up or down (possibly using gearing) to achieve a 'risk budget' level of Omega Metrics® ES.

This is a powerful method of risk control because our measured VaR and ES levels are very accurate. ES at the 99% level for 5-day returns typically gives excellent control over drawdowns.

Market Modes can be used to inform the risk budget.

Unstable Expansion Modes signal asset price bubbles. They can be used as a signal to increase the risk budget, provided there is an exit strategy.

Our Long Term Trend gives the signal to reduce the risk target.

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Trading Omega Metrics® Risk, Mode and Trend Analysis

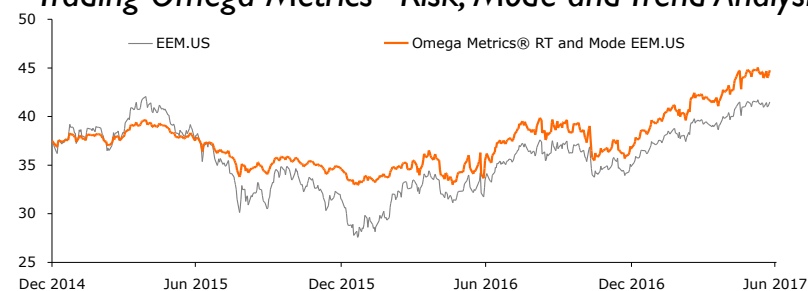
In a downturn, Unstable Contraction modes signal asset price anti-bubbles. They can be used as a signal to short sellers to increase their risk budget, provided there is an exit strategy.

Our Short Term Trend together with an Unstable Contraction is a reliable indicator that a rebound is underway and that we should revert to market risk to take advantage of this 'value' signal.

As the rebound phase progresses, Unstable Expansions frequently emerge and the cycle begins again.

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Trading Omega Metrics® Risk, Mode and Trend Analysis



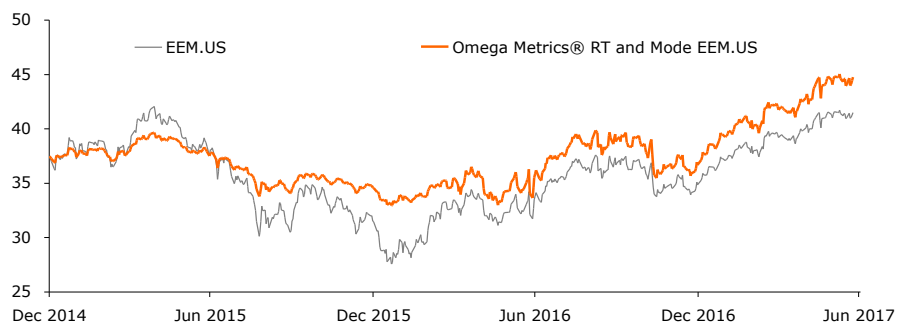
The iShares Emerging Markets ETF provides a recent example. By January 2015 the long term trend was down and an Unstable Expansion Mode had recently corrected. The 5-day 99% ES target was set at 5%.

In March of 2016 an Unstable Contraction Mode together with a Short Term Trend signalled a rebound so we returned to market risk.

In September 2016 another Unstable Expansion Mode was confirmed and the risk target was re-set at the average ES for the previous 250 days.

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Trading Omega Metrics® Risk, Mode and Trend Analysis



This process produced significant benefits over the simple buy and hold alternative.

The annualised return was increased from 4% to 7.4% while annualised standard deviation was cut from 16% to just over 10%. The maximum drawdown of 34% was cut to 17%.

The average exposure from January 2015 to May 2017 was 0.75 with a minimum of 0.34 (in January 2016) and a maximum of 1.4 (which is the current level).

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Omega Metrics® Trend Trading

Omega Metrics® Trend Trading employs higher frequency trend analysis and an adaptive process for choosing trading parameters to produce long-short trading programs.

These typically hold positions for periods of a few days (with no intra-day trading).

They incorporate risk control through Expected Shortfall targets using our proprietary technology and also through the use of diversification through a 'voting' system in which the full risk budget is available only when all of the trading programs take the same directional view.

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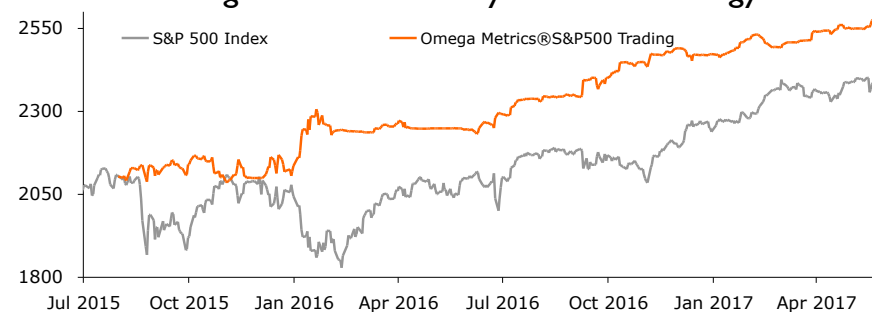
Omega Metrics® Trend Trading

This approach has proved effective in every asset class we have tested it on.

Here are some examples from equity futures, commodities and foreign exchange.

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Omega Metrics® Stormy Weather Strategy



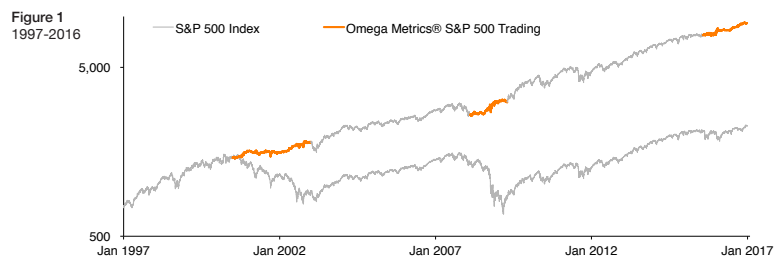
Our approach to trend trading successfully captured short term trends in the US Equity Market. This is the history from the end of July 2015, when our long term trend said that the most recent boom in global equity markets had made the transition into the danger zone.

From 1 August 2015 to 31 May 2017, the S&P 500 had an annualised return of 7.7% with annualised standard deviation of 11.2%. The maximum drawdown was 13.3% and the worst monthly loss was 6.3%. The Stormy Weather Strategy produced an annualised return of 11.4% with annualised standard deviation of 5.3%. The maximum drawdown was 3.7% and the worst monthly loss was 1.4%. The strategy has a beta of -0.22 with respect to the S&P 500 Index.

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Omega Metrics® Stormy Weather Strategy

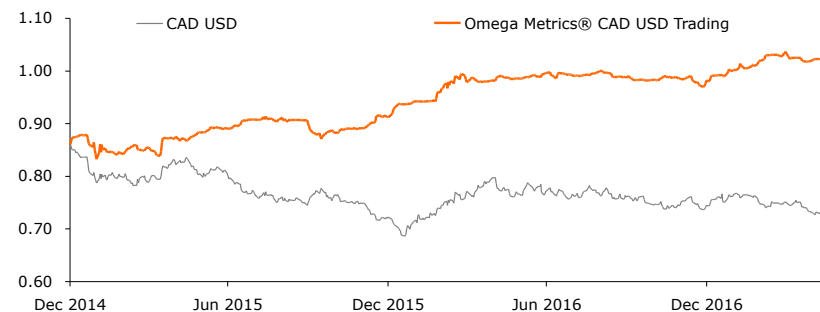
Table 1 1997-2016	Annualised Return	Annualised Std. Dev.	Beta wrt. S&P 500 Index	Monthly Mean Return	Monthly Alpha wrt. S&P 500 Index
Omega Metrics® S&P 500 Trading	13.4%	11.6%	0.50	1.11%	0.83%
S&P 500 Index	5.7%	15.3%	n/a	0.56%	n/a



Short term trend trading would also have successfully navigated through the two previous boom to bust transitions in the US equity market.

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Omega Metrics® CAD USD Trading



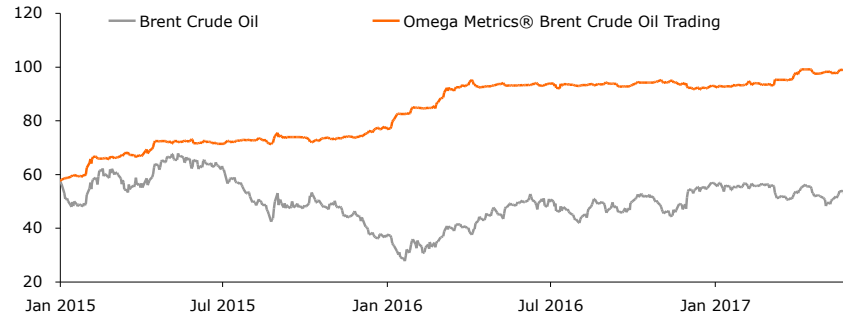
Our approach to trend trading has successfully captured short term trends in the CAD USD exchange rate from the end of December 2014 to the end of May 2017.

In that period CAD USD had an annualised return of -6.97% with an annualised standard deviation of 10.4%. The maximum drawdown was over 20% and the worst single month loss was 8.6%.

Omega Metrics® Trend Trading produced an annualised return of 6.83% with annualised standard deviation of 5.1%. The maximum drawdown was 5.3% and the worst single month loss was 3.3%. The simulation return is on the face value of the position without any transaction costs.

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Omega Metrics® Brent Crude Oil Trading



Trend trading has also successfully captured short term trends in the Brent Crude Oil price from the end of December 2014 to the end of May 2017.

In that period Brent Crude had an annualised return of -5.1% with an annualised standard deviation of 33.5%. The maximum drawdown was over 59% and the worst single month loss was 18%.

Omega Metrics® Trend Trading produced an annualised return of 25.4% with annualised standard deviation of 11.2%. The maximum drawdown was 4.8% and the worst single month loss was 2.5%. In 2017 the Trend Trade was up 5% to the end of May while Brent Crude was down over 10%.

The simulation return is on the face value of the position without any transaction costs.

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