Detecting Insincerity – Case Study

The purpose of this document is to show that open sources of information, such as transcripts of speeches or a company's press releases, may offer useful information when monitored for a longer period of time, information which otherwise would be very hard to detect.
When we started testing our system some years ago, we monitored and analyzed a high number of texts that were publicly released by the same sources over a longer period of time.

The Enron Bankruptcy case.

One of the older cases at which we looked at that provided some very interesting results is the famous Enron bankruptcy from 2001, which at the time was named the largest in U.S. history. It was proved that Enron was keeping important information hidden from the public and in such cases, having the ability to detect the signs of insincerity early on can make a real difference.

In this case we gathered and analyzed the official press releases of Enron Corporation from the period April 1996-January 2002. The main question on our minds was: how long before the actual bankruptcy could we have predicted Enron's downfall, just by carefully analyzing its press releases?

First of all, here is a brief chronology of events:

In December 2001, the company Enron officially declared bankruptcy. This company was formed in 1985 when Houston Natural Gas merged with InterNorth. In just 15 years, it has evolved from a controlled gas company into one of the largest wholesalers of gas and electricity."

In 2000, there was nothing that would point to the collapse of the company, and instead the reports showed an impressive growth and good prospects for the company. The company's success was even noticed by many prestigious publications.

The first negative signals have appeared in August 2001, when Jeffrey Skilling, who was appointed CEO in February 2001 and who was one of the key figures of the company since its inception, suddenly left the company. Problems started in October, when Enron had published the results of its activities for the third quarter of 2001. On the same day, October 16, Standard & Poor's affirmed the long-term corporate rating of Enron at BBB + with a stable outlook, and on 22nd October Enron announced a reduction in the cost of equity at $ 1.2 billion.

On November 1st Standard & Poor's downgraded the long-term corporate credit rating of Enron to BBB, and on November 19th it was found that the net profit for the period from 1997 to 2000 was overstated by $586 million and debt was understated by $628 million. After a series of revelations involving irregular accounting procedures bordering on fraud perpetrated throughout the 1990s involving Enron and its accounting company Arthur Andersen, Enron suffered the largest bankruptcy in history (surpassed since then by those of Worldcom during 2002 and Lehman Brothers during 2008). Enron's share prices suddenly decreased from more than US $90.00 during the summer of 2000 to just pennies.

Results for the sincerity category:

One of the first indicators of the company's downfall is the level of sincerity obtained by analyzing Enron's press releases. Our system detected the words which have no real meaning and which offer non-specific information. When measuring the non-specific information (InfNon) contained in press releases and comparing it to the amount of text content offering clear information (InfS) over time, we can create a chart that clearly shows how the level of insincerity increases overall.

InfNon - InfS
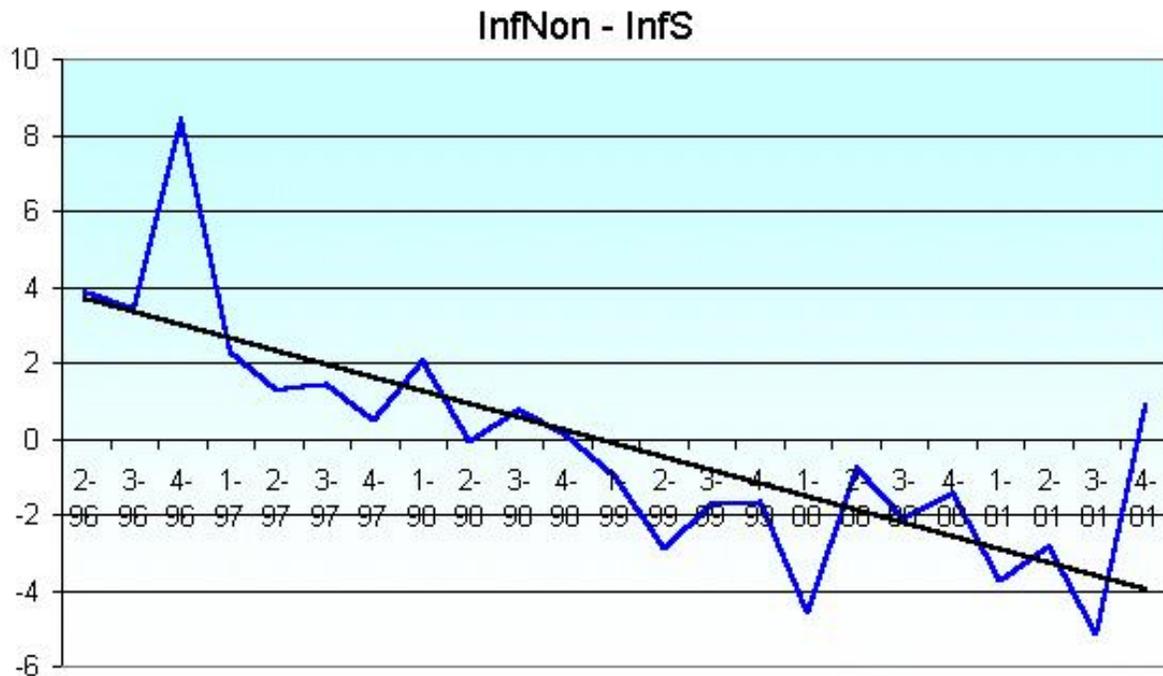
The black straight line indicates a linear approximation for the whole period of time regarding the amount of specific information offered through official press releases. The chart shows that there weren't just random fluctuations over time, but instead there were clear deviations from the norm. This negative trend indicating an increase in insincerity shows that every year, within the press releases offered, the amount of specific information had become less and less, which can be a clear sign that there is something to hide.

Results for semantic differential:
In order to further reveal information that could have predicted Enron's collapse, in our study of their press releases, we have looked also at results for the semantic differential category, specifically at the number of words used reflecting a positive attitude.
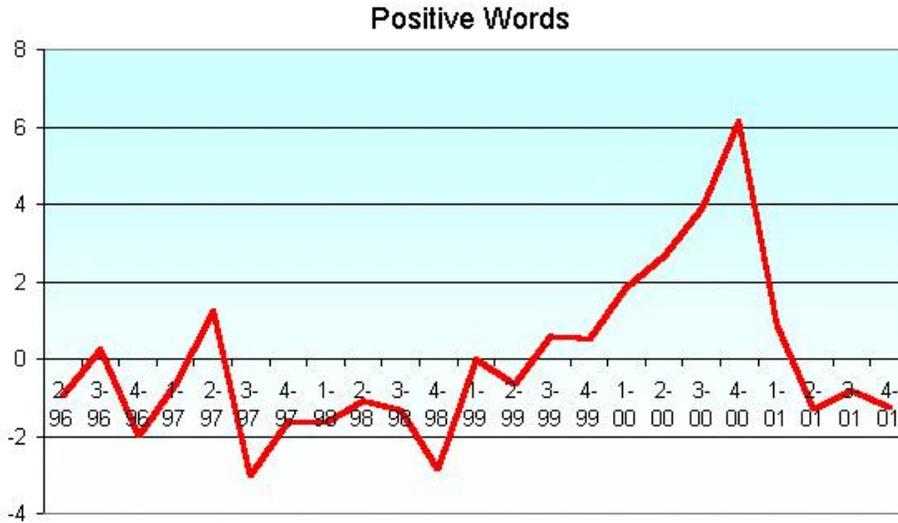
Positive Words

The chart shows a significant growth in the number of positive words contained within the official press statements from late 1998 to late 2000, and then for the first two quarters of 2001 a sudden drop almost to the initial level.

Let's compare this chart with the indicators of dynamics in the 2001 Index S & P.
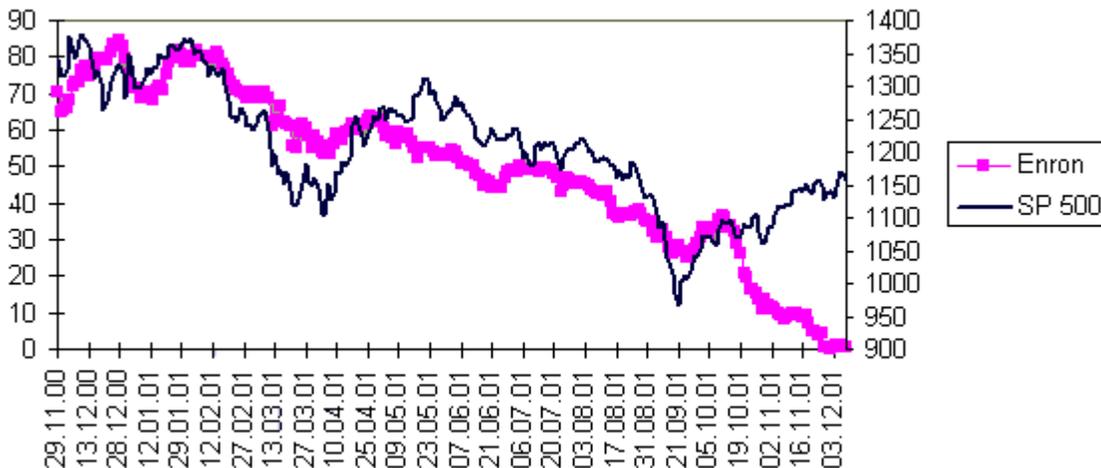
It's easy to notice that the stock prices of Enron in the first two quarters of 2001 followed the dynamics of the index S & P. When we look at the chart showing positive language, we have to ask the question: why has there been such a sharp decline on the positive category, starting with the end of the fourth quarter of 2000, when for the past 2 years the positive category had only grown? Moreover, we have to remind you that the first clear negative signals emerged only in August 2001 – in the third quarter of 2001, when the company CEO suddenly resigned from his position. When adding to this the fact that the insincerity level kept rising throughout all this period, one can't help noticing that there must have been something going on inside the company which was clearly being kept from the public.

In other studies that we have conducted over time, in order to detect insincerity from texts, we had compiled communication profiles for each source monitored, and used them as baselines for detecting inconsistency in the communication patterns. In the following example we will present you the results of one of our studies related to detecting insincerity.

Bill Clinton's speech after the Monica Lewinsky scandal.

This example is of former president Bill Clinton's speech following the Monica Lewinsky scandal. In this case we had analyzed his official statements prior to the scandal and compiled a communication profile for him. By using this profile as a basis for comparison, we quickly noticed that there were inconsistencies in his communication pattern in his speech from after the event. Below is a transcript of Bill Clinton's official statement:

"Good evening.

This afternoon in this room, from this chair, I testified before the Office of Independent Counsel and the grand jury.

I answered their questions truthfully, including questions about my private life, questions no American citizen would ever want to answer.

Still, I must take complete responsibility for all my actions, both public and private. And that is why I am speaking to you tonight.

As you know, in a deposition in January, I was asked questions about my relationship with Monica Lewinsky. While my answers were legally accurate, I did not volunteer information.

Indeed, I did have a relationship with Miss Lewinsky that was not appropriate. In fact, it was wrong. It constituted a critical lapse in judgment and a personal failure on my part for which I am solely and completely responsible.

But I told the grand jury today and I say to you now that at no time did I ask anyone to lie, to hide or destroy evidence or to take any other unlawful action.

I know that my public comments and my silence about this matter gave a false impression. I misled people, including even my wife. I deeply regret that.

I can only tell you I was motivated by many factors. First, by a desire to protect myself from the embarrassment of my own conduct.

I was also very concerned about protecting my family. The fact that these questions were being asked in a politically inspired lawsuit, which has since been dismissed, was a consideration, too.

In addition, I had real and serious concerns about an independent counsel investigation that began with private business dealings 20 years ago, dealings I might add about which an independent federal agency found no evidence of any wrongdoing by me or my wife over two years ago.

The independent counsel investigation moved on to my staff and friends, then into my private life. And now the investigation itself is under investigation.

This has gone on too long, cost too much and hurt too many innocent people.

Now, this matter is between me, the two people I love most -- my wife and our daughter -- and our God. I must put it right, and I am prepared to do whatever it takes to do so.

Nothing is more important to me personally. But it is private, and I intend to reclaim my family life for my family. It's nobody's business but ours.

Even presidents have private lives. It is time to stop the pursuit of personal destruction and the prying into private lives and get on with our national life.

Our country has been distracted by this matter for too long, and I take my responsibility for my part in all of this. That is all I can do.

Now it is time -- in fact, it is past time to move on.

We have important work to do -- real opportunities to seize, real problems to solve, real security matters to face.

And so tonight, I ask you to turn away from the spectacle of the past seven months, to repair the fabric of our national discourse, and to return our attention to all the challenges and all the promise of the next American century.

Thank you for watching. And good night."

Category	% of speech	Number of words	Comparison with profile
INFORMATION			
Insincere	3.88	21	2.3

As a result of the comparison with his previous speeches, our system detected a much higher value for insincere words (words which offer no exact information) than what would be considered normal for the former president. This inconsistency in Bill Clinton's communication pattern might lead us to question his level of sincerity at that time, because it only shows that parts of information were being kept from the public.

Conclusion

We believe that, when used properly, our system can accurately detect signs of insincerity in the communication patterns of people or within official press releases of companies. Important information, which could otherwise be hard to detect, can be obtained when analyzing texts from the same sources over a longer period of time, and having the ability to create profiles for specific people or companies could be of significant importance when looking to uncover the truth.

References:

1. All of Bill Clinton's speech transcripts which were used in the case study (including the ones used to compile his communication profile) were taken from www.allspeeches.com
2. http://en.wikipedia.org/wiki/Enron_scandal