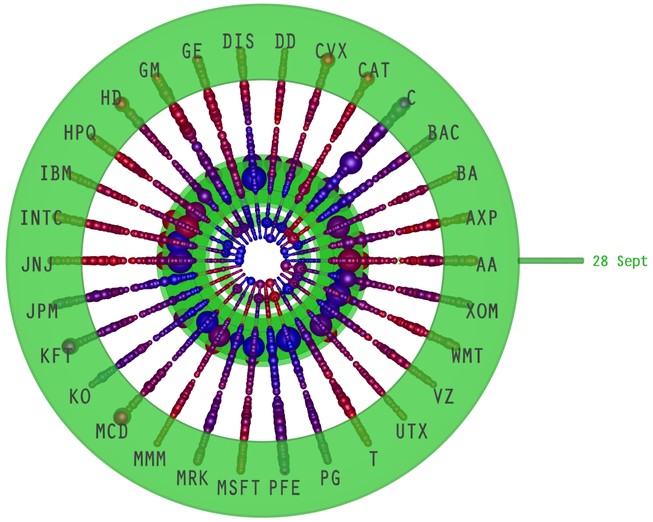
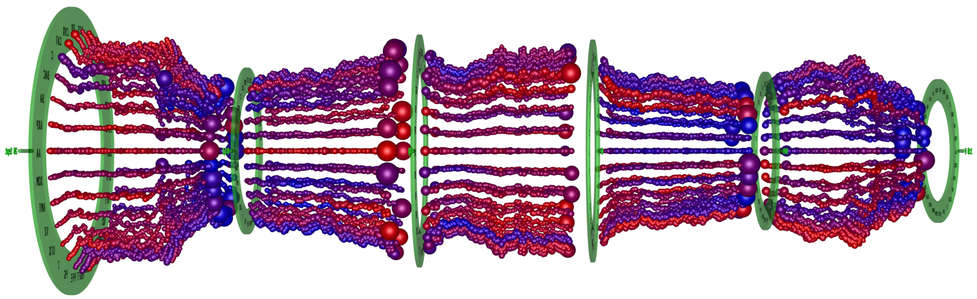
The Tunnel of Despair

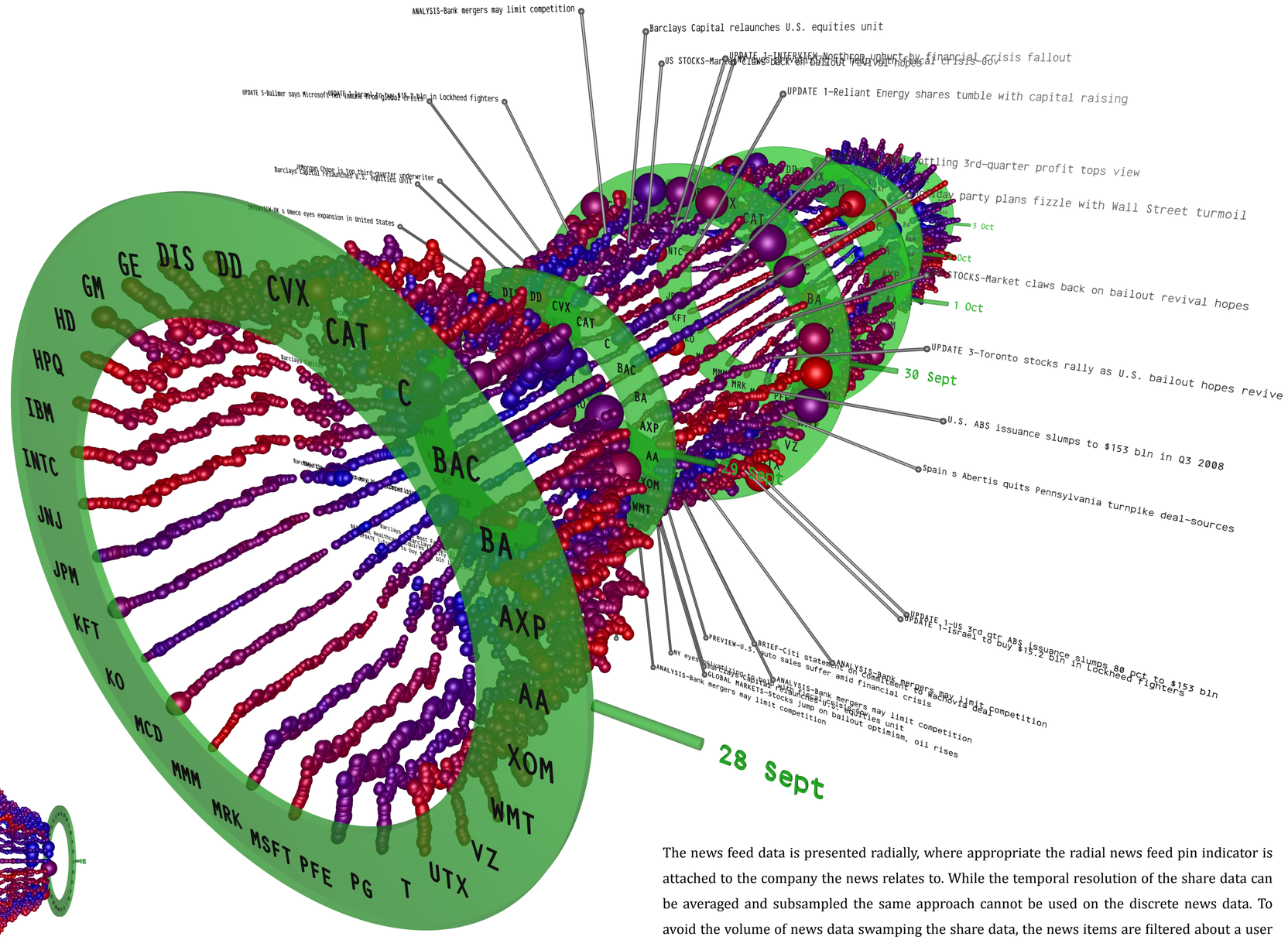
Presented here are samples from an exercise to visualise data from the New York Stock Exchange for 5 trading days starting on the 28th September 2008, the week where the extent of the global financial crisis became apparent. The data consists of stock information for 30 companies that make up the Dow Jones Indusrial Average, the DJ index itself, and those news feeds from Reuters that relate to the DJ index. In total there are almost 2 million stock events and over 2000 news items. The intention of the visualisation is to embed the data in 3D space, give the user choices of which window of data to view, and provide a means for interactively exploring the data. The form of the data representation is to give the user the sense of travelling down and along a time tunnel.



The view down the tunnel from the start of trading on the 28th Sepember 2008. The radius of the tunnel in time is determined by the DJ Index. Each company is represented radially about the tunnel rim and indicated by their unique company identifier.

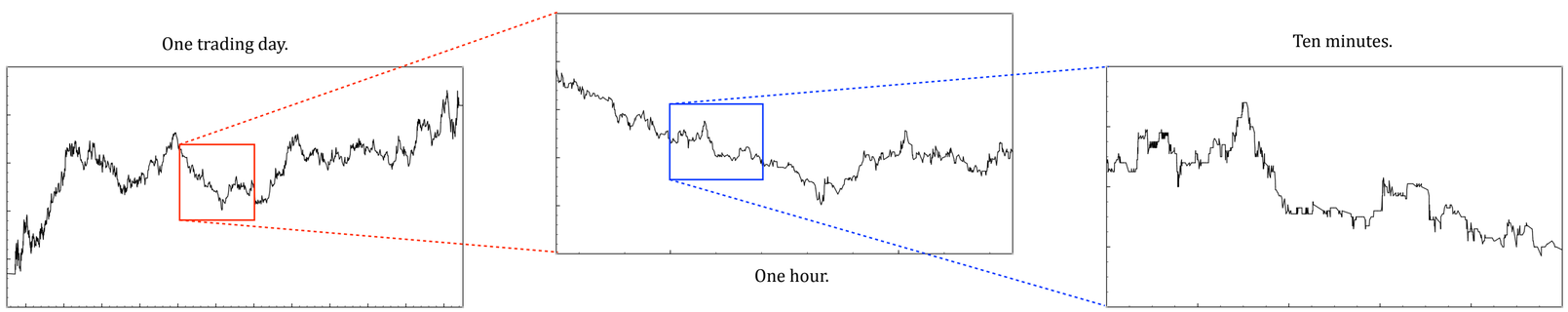


The above shows a side view of the tunnel without the news events. The temporal resolution and the time period are chosen by the user. In the above case the whole 5 trading days are shown and the time resolution is 1 minute, the prices and trades are averaged over this sliding time window. The trading period lasts for less than 1/3 of a day, as such, the periods with no data when the exchange is closed have been removed. The green disks indicate the start of trading on each day. The share trade price is mapped to the colour of the spheres, blue for lowest and red for highest. The volume of shares traded is mapped to the radius of the spheres, note the large volumes traded just before closing on each day. The ranges for these mappings (volume and price) can be chosen to be local to the individual company and time segment being explored (the case illustrated here), global over the history of the company, or global over all time and all companies.



The news feed data is presented radially, where appropriate the radial news feed pin indicator is attached to the company the news relates to. While the temporal resolution of the share data can be averaged and subsampled the same approach cannot be used on the discrete news data. To avoid the volume of news data swamping the share data, the news items are filtered about a user selected time window, in the above case a 15 minute window soon after midday on the 29th September 2008.

While the images shown here include the whole 5 day time period, the user can zoom into narrower time windows or show activity as trading occurs along with some historical data. Zooming in reveals one interesting nature of such share data, that is, the self similarity across a range of scales. This is best observed in the following which shows the stock trade price for one company. This is an expected characteristic of fractal/chaotic systems as well as noise distributions such as 1/f noise, it places limits on any attempted predictions.



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