

# The 5th Column

The killer app for global thematic investors

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## The Quantified Self - Big Data.

We are often asked what the biggest or most important trend is. Just as often, we are asked what is the latest, or newest trend. We live at a time when there are a multitude of trends to invest in. Some could be described as parochial because their impact is limited and local. Gallium Arsenide, graphics processors, ultrabooks are parochial trends. The smartphone was another parochial trend, which has since mutated and gone universal due to the creation of Apps.

A universal trend will not be tied to one industry and its impact will be more subtle but will ultimately have more influence than a parochial trend. That is because a universal trend will change the way large sections of the economy operate. It will lead to new business models, new ways of managing companies and creating wealth. Three examples of universal trends would be Big Data, which we focus on this week. Automation is a universal trend that has been with us for a number of decades but is now accelerating because it has encountered another universal trend -artificial and machine intelligence. Computers can now not just emulate what we do they can cut humans out of the loop all together and communicate directly with each other.

## Apple, Google and the approach of Policeman Plod.

Google has been caught red handed sidestepping Apple's instruction not to upload personal data from the Safari browser. Google is in the wrong but the reason it did what it did was because Apple refused to release the data which Google could use to improve search results. This is yet another example of companies owning Your data. As the internet continues to crystalize into separate fiefdoms - Mac World, Facebook World and Amazon World, there will be more of this. Each of these companies will seek to earn an advantage from our personal data, such as address books.

The reach of these fiefdoms will continue to metastasize and like all businesses the temptation to cut corners and earn a little more from their customers will prove too difficult to resist. Do you really want Rupert Murdoch to own your data? Facebook, Amazon and Apple are becoming modern telecoms networks, but instead of simply offering us voice they offer a range of other types of communication. At present these companies are regulated with the lightest of touches but the history of networks suggests that this cannot continue forever. The fact that each of these companies is playing fast and loose with our personal details suggests that self regulation will not work. Does it ever? We have no idea when this will happen but it is a racing certainty that online services will need to be more closely regulated. That will be a great shame. While one will bridle at the personal intrusion it is great fun investing in an oligopoly with barely any regulation.

**The stocks**

**Intuitive  
Surgical**

**Teradata**

**Saks**

**Apple**

**Google**

**Amazon**

## The Quantified Self - Big Data

What is it about making a billion dollars that make some people so gloomy? The US economy is becoming more productive and GDP has finally passed the pre crisis peak. We are living in a golden age of innovation but some people refuse to see it. Take **Peter Thiel**, who made a few million as a founder of **Paypal**. He will make rather a lot more from his holding in **Facebook** and some other sundry ventures he was wise enough to back. Money and the fact that he has been fortunate enough to see some successful entrepreneurs close up has not lightened his outlook. Which may prove that pessimism is the congenital disease of those cursed with a philosophical turn of mind and oodles of cash. Perhaps philosophy and money are not meant to go together.

Thiel has recently been talking to Francis Fukuyama, a public intellectual. If you follow this [link](#) you can read the entire interview. Here is a direct quote that will give a glimpse of the lay of Thiel's personal intellectual landscape. **"I think the advanced economies of the world fundamentally grow through technological progress, and as their rate of progress slows, they will have less growth. This creates incredible pressures on our political systems."** His point is that outside of internet and finance there has been little innovation in the economy. From what he says here and what we have read elsewhere, Thiel believes that America was more innovative in the past when it tackled big projects, such as the lunar landing. On his reading this age does not quite measure up.

Thiel will have some support from economists who are fond of pointing out that America's spending on R&D has fallen as proportion of GDP, over the last decade. In the 1990s some of the same economists argued that the private investment in technology had not yet shown up in the productivity numbers. They were wrong then and we suspect they are wrong now.



No surprise then that in an age of high unemployment the economy is screaming out for staff who have the smarts to analyze data. A report last year by [McKinsey](#) estimated that the US needs 150,000 new data experts and 1.5m managers with data skills. IDC, a technology research firm, estimates that the amount of data is growing at 50% a year. Just as in the Depression, Americans are being put out of work but it is not just because of a credit squeeze but because of technological progress. It is worth again revisiting Keynes 1930 essay,

As we have argued before, American is riding a wave of innovation that is focused on automation, artificial intelligence and the sophisticated use of analyzing data. One of the important trends the age is our ability to amplify weak signals. In other words, to tease patterns and relationships out from a mass of data that would not have been detected before. Another feature of our age, which is linked to this ability to detect weak signals, is the march of automation into the higher reaches of the economy. Mr Thiel might have overlooked the fact that the next fighter plane to be commissioned by the US navy will be the fully robotic X 47. He might never have heard of **Intuitive Surgical (ISRG)**, a successful company that makes surgical robots.

Another sign of how automated our age is becoming could be found in a recent issue of the [New York Times](#) : fresh from locating Osama Bin Laden, drones are now being used to to take photos of real estate and for data collection. We might



[The Economic Possibilities for our Grandchildren](#) where he reflects upon the fact that the world was then living through a period of high velocity change and therefore large numbers of people could not be retrained fast enough to fill the new jobs that employers were looking to fill. Just as then, people like Mr Thiel are suffering from the vapors because they are only capable of focusing on the short term and cannot see the longer term trend.

The discovery of the microscope changed science, which sparked innovation across medicine, pharmaceuticals, chemistry, materials and electronics. Today it is data which is changing the way we see the world. As we have reported before, key to what is happening is the vertiginous drop in the cost of storing data. In the mid 1980s it would have cost \$2 trillion to store a Petabyte of data. Today, the cost has dropped to \$40 and it continues to fall. In combination with the drop in storage we are also witnessing a kind of [Cambrian Explosion](#) in new life forms from smartphones to programmable sensors used in medicine, cars and city infrastructure. Sensors now are usually connected to the internet. On various estimates, there will be 10 bn to 20 bn devices connected to the internet within three years. Each one of those billions of sensors captures information that can be analyzed. This information can then be triangulated with information from other sources, such as social networks, our online buying history or our physical position in time and space as captured by the mobile or WiFi network that we are on at the time. The economist, W. Brian Arthur, has, in conjunction with McKinsey, estimated that within two decades the online economy will be as large as the real economy. In an environment of escalating connectedness the collection and analysis of data will be what determines success.

Just by chance, this week, we glimpsed a short interview with the CEO of **SAKS**, the US luxury store, on CNBC. When answering a question about the future direction of the company, he said that one goal was to increase capex on data analytics. When investors have the opportunity to question companies in areas such as retail and financial services they might think of spending as much time probing into how companies manage and analyze data because this is becoming the most important asset. As an example, we would refer you to last year's chairman's statement from Jeff Bezos of **Amazon** (issue 35, 5 May 2011). At the very least this will give you a number of the technical terms used to denote the different types of data analysis. Checking these names on Wikipedia, might prove a useful exercise.

## The Money Angle.

Over the past two years I.B.M., E.M.C. and Hewlett-Packard have collectively invested billions of dollars in the field. Oracle bought Endeca, a company to manage and search through large volumes of things like e-mail, for a rumored \$750 million. H.P. paid \$10.3 billion for Autonomy, which does a much bigger version of the same thing. Accel Partners, a leading venture capital firm is running a \$100 million Big Data fund.

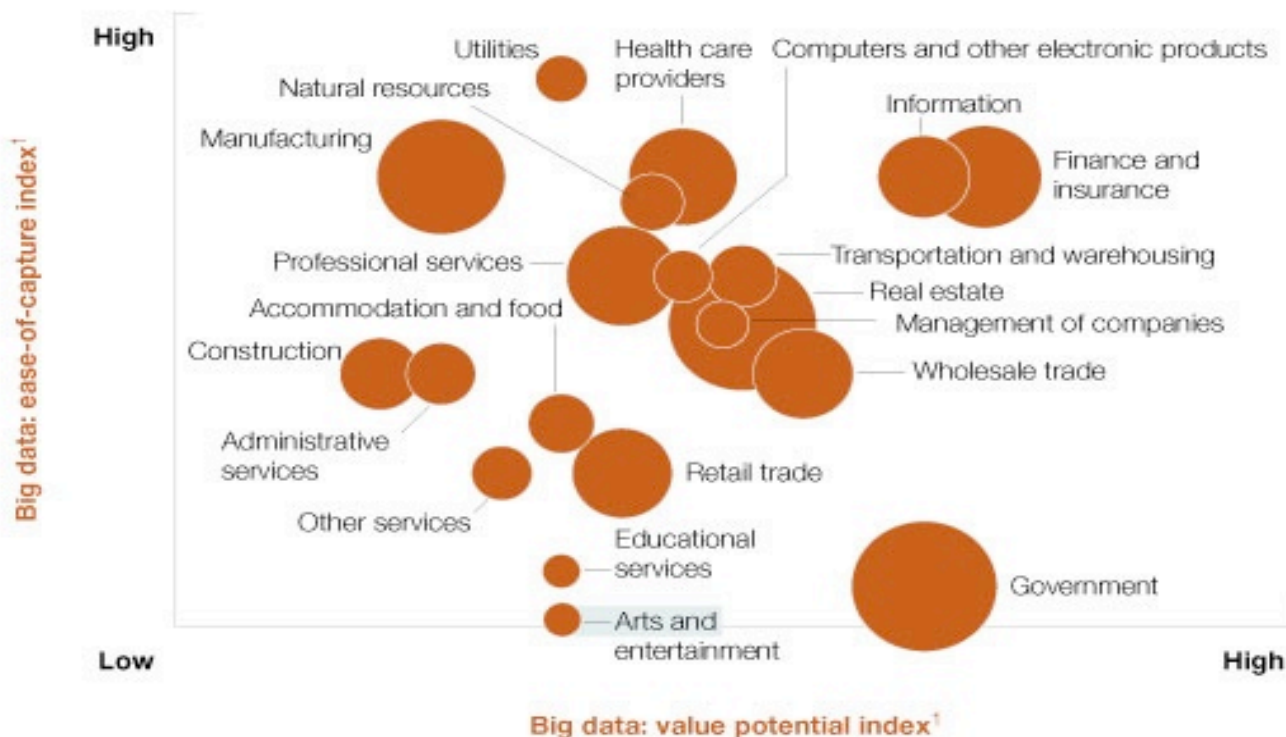
There are an uncountable number of data-mining start-ups in the field: MapReduce and NoSQL for managing the stuff; and the open-source R statistical programming language, for making predictions about what is likely to happen next, based on what has happened before. Established companies in the business, like SAS Institute or SAP, will probably purchase or make alliances with many of these smaller companies.

It might not be comfortable and it most certainly has a dark side, but we live in an age when the self is can be quantified. This is, of course, a continuation of a trend that began a century ago when [Frederick W. Turner](#) first had the idea of scientific management. His ideas were energetically embraced by **Ford** and others and were one of the building blocks that enabled American business to dominate the world. The belief, and the evidence is beginning to back it up, is that the human self more predictable if you have enough data. We may be able to resolve the great contradiction at the heart of human affairs, which is that people do one thing while they say the opposite.

A good example of what is taking place is of course the explosion in the so called Apps economy. It has been estimated that the creation of Apps, downloadable applications that run on tablet and smartphones, has created nearly half a million jobs in the US since 2007. The influence of Apps on the economy is, in our view, likely to become substantial because it

Example: US economy

Size of bubble indicates relative contribution to GDP



<sup>1</sup> For detailed explication of metrics, see appendix in McKinsey Global Institute full report *Big data: The next frontier for innovation, competition, and productivity*, available free of charge online at [mckinsey.com/mgi](http://mckinsey.com/mgi).

Source: US Bureau of Labor Statistics; McKinsey Global Institute analysis

has democratized innovation. Individuals and small companies are able to commercialize ideas on a scale not seen before thanks to Apps stores. In addition smartphones and tablet computers will be used by billions of people connected to the internet. This might not rate in Mr Thiel's mind compared to a lunar landing. However, wireless devices and Apps innovation will be able to reach the nerve endings of the economy. The next section, over the page, will develop this point further, we feel that Mr Thiel is underestimating the potential of an economy based upon thought. Such an economy will make the achievements of the lunar landing appear rather parochial.

**Professor Erik Brynjolfsson**, of MIT issued a report last year that examined how companies could improve competitiveness by making better use of data. The study looked at 179 large companies across the US and found that those who were making "data driven decisions" were achieving productivity gains that were 5% to 6% higher than their peers.

The chart above comes from Mckinsey. The volume of data that businesses collect is exploding: in 15 of the US economy's 17 sectors, for example, companies with upward of 1,000 employees store, on average, more information than the Library of Congress does.

## A thought based economy.

On one level our economy is composed of photons and electrons, which travel along optical cables, through the air or along wires. The transmission of these particles takes place at or close to the speed of light and represents the transference of energy and information. A photon or an electron has energy, after all. When we look up at the sky at night we are also witnessing photons, which have travelled from distant points in the universe. If a supernova were to explode, releasing energy, which might be the equivalent of billions of our sun, we may just be able to see it with the aid of powerful telescope. Space is so large that even the most powerful events that we know of are often hidden from the naked eye and the effect upon our planet can only be measured by the most sensitive instruments. Massive high energy events are swallowed up by the even more enormous dimensions of space.

Time now for a thought experiment. Imagine that you were on a starship at the far end of our galaxy, when you pick up a piece of gossip that has finally reached you via an inter galactic communication. This communication can only travel at the speed of light, so by the time that it reaches you it is already old news. However, what you hear has a material impact upon you. It changes your pulse rate and causes your tummy muscles to tighten and your body to begin pumping stress hormones. For the sake of the thought experiment it may be that you hear that your partner has died or that a meteorite has hit earth and killed hundreds of millions of people. Then again it might simply be that Chelsea has won the Champions' League. The photons that have brought this knowledge have no direct impact upon you at all because you read them as symbols upon a screen. The thing that has had the material impact upon your body and probably on the bodies of all those you associate with or conveyed what you have heard is, of course information.

One of the more stupid things that some investors or equity salesmen say is that they like to invest in tangible things that pass the kicking the tire test. They are insinuating that IT, is in some way insubstantial. What they are demonstrating is a singular inability to imagine the power of information or to grasp that the processing of information is the key not only to the economy but to all life. A thought based economy, which is what ours is becoming has infinite potential because it needs little in the way of natural resources or energy. This is, after all, why we like to invest in technology, apart from being lightly regulated, or even unregulated, technology companies often can achieve colossal scales with little capital. Apple provides a case in point. As we have discussed before, in the final quarter of last year it captured 75% of the profits of the entire mobile handset industry, almost all of the profits of the tablet computer industry, likewise with music players and over a third of the profits of the personal computer industry. Imagine an inverted pyramid, all this wealth has been generated by a company that only needs to spend just over 2% of its sales on R&D.

Mr Thiel knows, we are sure, about the power of information processing but his comments demonstrate a myopia commonly found amongst a certain type of financial practitioner. It may go some way to explaining why his attempts to multiply his wealth even further, by establishing a hedge fund called **Clarium**, ended in abject failure. For all the intellect and wealth there is at the core of such people a withering pessimism that hobbles their imaginations and stops them from recognizing what is happening in front of them. This character trait often leads to dogma and a naive fondness for the dispiriting fiction of [Ayn Rand](#).

As one noted physicist recently pointed out, all that you need for a Nobel prize is around you, what is stopping you from seeing it is your mind. This is one reason why we might need technology for it has reached the point where it can enable us to pick up the weak signals that reveal new knowledge. Data and analysis have the power to free us from blind reliance on intuition, incorrect assumptions and prejudice. The world needs better data analysis not more billionaires who believe that they are social pundits.

Event	Commentary
<p><b>US medical profession adopts a turkeys voting for Christmas strategy.</b></p>	<p>A leading group of U.S. doctors is trying to tackle the costly problem of excessive medical testing, hoping to avoid more government intervention in how they practice. The American College of Physicians (ACP), the largest U.S. medical specialty group, is rolling out guidelines to help doctors better identify when patients should screen for specific diseases and when they can be spared the cost, and potentially invasive procedures that follow. "Excessive testing costs \$200 billion to \$250 billion (per year)," Dr. Steven Weinberger, CEO of ACP said in an interview from his office in Philadelphia. "There's an overuse of imaging studies, CT scans for lung disease, overuse of routine electrocardiograms and other cardiac tests such as stress testing."</p>
<p><b>Social media.</b></p>	<p>The US social gaming market will blow past \$5.5 billion in 2015, according to a new report by BI Intelligence. The social games market, including smartphones, will more than double from last year, when its was estimated to be worth was \$2 billion. In another example of how social networking is transforming different types of media MTV News, the Today Show, The Daily Show, CMT, MSNBC, BuzzFeed, Mashable, and CBS local affiliates in Los Angeles and New York are among new and old media organizations releasing <a href="#">news-themed Facebook applications</a>. Facebook is enabling media companies to write rich applications in HTML5 that can be found by a large number of users without the need to go through the Apple, Android or Amazon Apps stores.</p>
<p><b>Mobile operators are losing SMS revenues to smartphone messaging services.</b></p>	<p>The increasing use of IP-based social messaging services on smartphones cost telecom operators USD 8.7 billion in lost SMS revenues in 2010 and USD 13.9 billion in 2011, according to a new report from Ovum. That's equivalent to 6 percent of messaging revenue in 2010 and 9 percent in 2011. Ovum expects the use of messaging apps will only grow and recommends operators rethink their offerings to avoid losing more revenue. Importantly they can leverage their usage data and strong relationships with subscribers to develop their own messaging services. They also need to be open to partnering with app developers, sharing end-user data with them and allowing integration with the user's social connections. Working closely with handset vendors will also be important, as they control some of the most popular social messaging apps and can also provide preloaded applications.</p>
<p><b>Greece could lose its gold reserves.</b></p>	<p>Greece's lenders will have the right to seize the gold reserves in the Bank of Greece under the terms of the new deal. Greece has 111 tonnes of gold. In other words Greece has given up on its "money in extremis", gold. If they default they will have nowhere else to go. Its international assets will be seized and it will not be able to trade internationally at all.</p>

## About the 5th Column

The 5th Column enables its clients to see through the deluge of daily data and stock specific research. We seek to make un-obvious connections and to detect weak signals. The end game is to give our clients a wide range of reference so that they may better spot money making ideas when they appear from left of field. The 5th Column is interdisciplinary, because over 25 years of stock research we have come to realize that the best ideas often fall between traditional sector silos. Wherever possible we will identify the stocks that fit with our global ideas.

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