The digital panopticon and the new power of data

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Summary

- Insurance is being transformed by the data it can now access about risks. New products and services will benefit consumers, but concerns have been raised about how all this data will be protected and interpreted.

- All this 'big data' is providing insurers with unprecedented information about our lives. It resembles Jeremy Bentham's idea for a Panopticon, with consumers positioned around the ring and insurers watching us from the central observation tower.

- Regulators see data as their biggest challenge, so the Financial Conduct Authority's recent report on pay-day lending is revealing. Their analysis of a billion pieces of data allowed them to set new pricing and lending rules.

- Their approach resembles a 'tower within a tower', akin to the regulator sitting in its own observation tower within a ring of insurers, receiving streams of market and product data. A double Panopticon.

- Is this a game changing move? Could the power of the Panopticon radically change market attitudes towards ethics, fairness and culture? And might consumer concerns about their personal data fall away, knowing that regulators are able to see everything insurers are doing with it?

The Chartered Insurance Institute

CII Introduction: Big data is changing the way the insurance industry works and will continue to increase its influence on industry practices. It also has implications for regulators and their relationship with firms. In his latest Thinkpiece, Chartered Insurance Practitioner Duncan Minty considers how the increase in insurers' knowledge about our everyday lives will impact the future of the industry and how this resembles the eighteenth century reformer Jeremy Bentham's idea of a 'panopticon'.

Insurers have always relied on data for underwriting the risks presented to them: data about what is being insured and who wants to insurer it. The more data that is available, then the more confident the insurer iis in its underwriting. Yet there's a balance to be struck, between what the insurer would like to know and the ease and cost for the insurer in finding that out.

And there is always the customer to bear in mind: how many questions can you ask them before they start feeling put out by some of the questions, perhaps even the whole process? This has always been a tricky balancing act for insurers: you want your products to attract customers, but do not want to put those customers off by jumping them through too many underwriting hoops.

And now the ground upon which that balance has historically rested is shifting, with all sorts of possibilities opening up, some exciting, others worrying. You have the recent removal of utmost good faith from UK insurance law, changing the obligations that consumers are under when providing information about the risk to insurers. And you have the huge growth in digital datasets containing all sorts of information: about ourselves, about where we live, and about how we live. All rich pickings for an inquisitive insurer.

There has been a synergy between these developments. As insurers find it more and more onerous to ask questions directly of policyholders, they have increasingly been able to look for the answers in a growing range of datasets. This has reinvigorated the sector's swing towards lifestyle underwriting, with insurers assembling covers and pricing them according to an ever widening range of information about us.

This trend is typical of what has been termed the 3Vs of data: variety, volume and velocity. Variety in terms of many more types of data; volume in terms of bigger and bigger datasets, and; velocity in terms of being able to handle all this ever more rapidly.

Yet it is a trend in more than just numbers. Alongside the 3Vs of data have emerged analytical tools capable of extracting ever greater insight from all that data. The result is being called 'big data', defined along these lines:

"things one can do at a large scale that cannot be done at a smaller one, to extract new insights or create new forms of value, in ways that change markets, organisations, the relationship between citizens and governments, and more."[1]

Big data will deliver many benefits. It is going to revolutionise our understanding of health and disease, and of transport and pollution, to name but two. It will affect many aspects of our lives, of which insurance is only one. So this is a trend that will happen, and sooner than we think.

At the same time, concerns have been voiced around big data. What are its implications for privacy? What do we know about the conclusions it is drawing about us? The implications could be serious:

"If we fail to balance the human values that we care about, like privacy, confidentiality, transparency, identity and free choice with the compelling uses of big data, our Big Data Society risks abandoning these values for the sake of innovation and expediency."[2]

So there is a brave new world ahead and insurance will be part of it. The sector will undoubtedly evolve in new and innovative ways, but it will also have to grapple with genuine and growing public concerns about how it conducts itself in relation to all that data.

These concerns are only going to heighten as two further trends develop: the 'internet of things' and datalakes. The 'internet of things' is about turning everyday things into internet connected devices that will automatically collect data about our lives, such as fridges, cars, smartphones and heating systems. It means the present huge increase in collected data will surge upwards even faster. And instead of all this data being stored in an orderly fashion in 'data

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[1] 'Big Data, a Revolution that will Transform How We Live, Work and Think', by Viktor Mayer-Schönberger and Kenneth Cukier. Published by John Murray, London, 2013. Page 6.

[2] 'Big Data Ethics' by Neil Richards and Jonathan King, in Wake Forest Law Review, 2014. Available at SSRN: http://ssrn.com/abstract=2384174

warehouses', it will simply be poured into a datalake, a massive, easily accessible store of both structured and unstructured data. Together, these two developments signal a much increased capacity to first obtain and then process information about our everyday lives.

A future foretold

Developments like these make it possible for the activities of individuals to be tracked and recorded to an unprecedented extent. We are moving towards a world in which we are constantly being monitored in some way. And such monitoring will often be carried out without us actually realising that it is happening. We will just get on with our lives, not knowing if, or how, what we are doing is delivering data to someone.

It is a world that bears a striking resemblance to a revolutionary idea put forward in the eighteenth century by the English social reformer Jeremy Bentham. One of Bentham's interests was penal reform. The prisons then were abhorrent, with prisoners of all sorts locked up together in overcrowded and dirty rooms. In response, Bentham proposed a simple architectural solution called the Panopticon, from the Greek words 'pan' (meaning all) and 'opticon' (meaning to observe).

Bentham's Panopticon was a ring shaped building with a watchtower at its centre. Prisoners were to be housed in individual cells around the ring, open for inspection by way of their inside wall being just a grill. An inspector was to reside in the central watch tower, able to look into any of the cells whenever he wanted, but unable to be seen by the prisoners due to the use of lighting and slats.

The key feature of Bentham's design was to make everyone in the cells constantly visible, but for them to never know whether or not they were being watched. This would have the effect of 'normalising' the feeling of being watched: it would be so constant, yet so unknowing, that everyone in the cells would take it for granted. In the context of a prison, this would cause prisoners to restrain from any aberrant behaviour and comply with the regime.

Let us put aside the Panopticon's use as a prison, and instead, think of the ring shaped building as made up of many millions of rooms containing individual consumers, and the central watchtower as the location of firms gathering data about us. While consumers are getting on with their individual lives, data about those various

everyday activities is streaming into that central tower, to be stored there and analysed. Consumers have a broad understanding that this is taking place, and a general idea about how it is being done, but are never sure of exactly when, exactly how or exactly what. They invariably just accept that 'this is the way the world is going' and get on with their lives.

In return for providing all this data, consumers are expecting to receive more personalised products and services from those firms sitting in the central watchtower. And in many cases, this is starting to happen: from recommendations and 'other people bought' information, to promotional texts from a store you are passing or healthy eating suggestions from your smartphone. But at the same time, consumers aren't aware of how their data is fashioning all of those personalised offerings. They are unclear about how decisions are being drawn from their data, and whether this is being done accurately and fairly. When it comes to data, whose interests are being put first: theirs or the firms?

Some commentators have likened individualisation to isolation and raised concerns about abuse of power. Questions have been raised about the intentions of firms like Facebook and Google, to ensure that values like privacy, identify and free choice are given a say just as much as innovation and entrepreneurship. So what we may call the 'modern data Panopticon' is seen as a step forward, but not without the dangers of it also bringing about a step back.

The 'all seeing' insurer

Let us bring in the world of insurance. As mentioned earlier, insurance firms have always been interested in gathering data about the risks being insured and the people insuring them. Many insurance firms are working hard to maximise the opportunities of big data – a recent survey found that nearly one in four insurers have begun rolling out 'internet of things' (IoT) enabled technology within their business. They are doing so in order to not only provide policyholders with ever more tailored products, but also, and probably most importantly for them, to drive improvements in underwriting and claims performance. All that investment in IoT technology needs to improve the 'bottom line'.

With insurance having become such an embedded part of the everyday lives of people and businesses, insurers have become interested in virtually everything we do: our home

lives, our work, leisure and where we travel. And they are starting to use that information to fashion the cover we are offered, and the premium charged for it, under all sorts of policies: household, health, motor, life and pension policies for example.

So insurers are in effect moving into position within that central tower, observing a growing number of things we do, through the smart phones and devices that are becoming part of our everyday lives. And this move by insurers has all the characteristics of those 3 Vs of big data: it is happening faster and faster, drawing in an ever increasing range of data sources, and resulting in bigger and bigger banks of data about us.

And that move by insurers into the central observation tower has been accompanied by an supportive 'corporate mindset', exemplified in a recent speech by Huw Evans of the Association of British Insurers. He saw it as more important than ever that insurers:

"...demonstrate our comfort within a digital world in which everything is open unless there is a good reason for it not to be."[3]

So where does this leave consumers? They will of course find insurers increasingly intuitive about their needs and concerns, for example when they ring up to ask about their claim, or when a new event in their lives (marriage or children for example) is accompanied by the positioning of relevant marketing material.

And this intuitiveness will help counter those perceptions of the insurance sector as relatively faceless and self interested. But will it do more than that? Might it start to reinforce other perceptions? Are there concerns to be addressed, and are they being addressed?

Some serious questions

As the 'internet of things' takes hold, and insurers move ever more towards lifestyle underwriting, then more and more data will be accumulated. Bigger and more varied datasets can be hugely complicated and one way in which such complications will be managed is through more and more categorisation of that data. This categorisation allows

marketing people to slice and dice their firm's data for insight into who will buy what when; and allows underwriters to slice and dice for insight into propensity to pay and propensity to claim.

As the same time, the insurance sector is awash with data brokers and software houses promising all sorts of ways to boost that insight. However, some of the categorisations on offer seem far from neutral and objective. Biases in categorisations may only be annoying if it results in you receiving a lot of irrelevant marketing offers, but if an underwriter bases a big chunk of their risk assessment upon them, then various groups in society will find access to insurance becoming more difficult.

And this process of inclusion and exclusion will become much more subtle, as we begin to be categorised in a much more fluid and mobile world, in a world of the all-seeing digital panopticon. We will become categorised not so much by what our IP address says about where we live, but much more by what the 'internet of things' says about everything we get up to in our daily lives.

So we will find that these doors will be opening and closing at a much greater speed, and for a wider range of people, than in the past. So this process, which has been called 'social sorting', will be experienced not by just a few groups of people, but increasingly by many of us.

And we will not like some of the ways in which our lives become affected; about some of the products that become too expensive, some of the covers that become reduced, or some of the services that become difficult to access.

The big danger is that this increasingly complex process of sorting of risk, of differentiating between risks, could begin to look more like discriminating between risks. Insurance regulators in the United States refer to this as red-lining, after the underwriting of mortgage risk turned into a complete nightmare for the financial services sector in the US. The issue becomes so highly charged because what you're talking about is social justice and that attracts a completely different order of political debate than something like privacy.

Such dangers were hotly debated thirty years ago, but it is a debate that never died away. It became a rumbling issue for some sectors of society, undermining their trust in the insurance sector, but who were unable for lack of data to

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[3] 'Motor Conference Speech' by Huw Evans, Director General of the Association of British Insurers, December 2014. Available at www.abi.org.uk

prove if such practices still clung on. Could that be about to change?

It is a debate that has been reinvigorated on two fronts: firstly, because this emerging era of 'big data insurance' opens up opportunities for underwriting practices to be examined like never before, for decisions are now hard-wired into the software for sorting and analysing all that big data. And secondly, because those concerns are becoming more universal, as we all become sorted and labelled in some way.

And behind all this vast increase in data, in the sorting of data, in the multitude of data categories, lies a significant structural change taking place in the insurance market. As all this data allows the underwriting of risk to become more personalised, so questions are asked about the need for risk pooling. Which approach is fairer: pooling or personalisation? And what does 'fairer' actually mean in such circumstances?[4] Is it inevitable? And does it increase market stability or risk introducing a new volatility? Any market change generating questions about fairness and stability will certainly interest regulators.

What does this big data trend mean for regulation?

How the insurance handles this new era of data will become the sector's key ethical challenge over the next five years. Insurers may talk about handling customer data with sensitivity and fairness, which is great, but a commitment is only worth the extent to which it is delivered on, especially if it is framed within a 'corporate mindset' that starts from the premise that all data is open for insurers' use.

As underwriting and claims outcomes are increasingly derived from this new world of big data, it is becoming harder to follow the underlying decision process – underwriters already talk about not knowing how their end premiums are calculated, because of so many variables and nuances picked up in trawls of those huge datalakes. And if that's the case, what does that mean for the regulation of those decisions? How for example will an insurer demonstrate to the regulator that their underwriting or claims decisions are fair? How they do so should certainly

matter to a regulator who sees fairness as the dominant theme in 21st century financial services.[5]

So what does this brave new world of big data mean for the regulation of insurance firms? The UK's Prudential Regulation Authority (PRA) talks about data being the key regulatory challenge in financial services. Indeed, some people believe that the recent financial crisis could have been much reduced if the banks, and the regulators overseeing them, had had a better grasp of the data. So we should expect data to be shaping the way in which financial services is regulated. What shape might it take?

Touching the data

The Financial Conduct Authority (FCA) appears to be approaching this on two linked fronts. The first is their use of behavioural economics. This looks at the effects of psychological, social and emotional factors in the economic decisions taken by individuals and firms, and the consequences of those decisions for the take up of, and outcomes from, financial products.

This is part of the FCA's strategy to move regulation from being behind events, to being more forward looking. However, behavioural economists need data, in order to understand how people make good and bad decisions, and on the flip side, to check how proposed regulatory reforms might affect markets.

And the second (and particularly interesting) front is how the FCA went about obtaining such data for one of its recent market studies. The FCA wanted to address the lending and servicing practices of the newly regulated pay-day loan sector. At the same time, it was aware that were it to set its regulatory reforms at the wrong level, it might fatally undermine that market. Its approach was to draw in vast amounts of data from the pay-day loan companies about how their loans were being made and managed: it talked of handling a billion data points. It then analysed that data to understand how decisions had been made in the past (by both pay-day loan firm and customer) and, by the use of modelling, how such patterns of behaviour might change in the future if taken within new regulatory interventions on key lending and servicing parameters.

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[4] 'Do personalised premiums mean the end of risk pooling?' by Duncan Minty, 30th April 2013. Available at www.ethicsandinsurance.info

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[5] 'The Fairness Challenge', a speech by Martin Wheatley, Chief Executive of the Financial Conduct Authority, October 2013. Available at www.fca.org.uk

The FCA's chief executive Martin Wheatley refers to this as the 'technological empowerment of regulators'[6]. He sees the combination of data, technology and behavioural science as heralding a new era of regulation in financial services. So we can safely assume that the FCA will be extrapolating their experience with pay-day lenders into other markets where it suspects mis-selling could be taking place. It would be difficult to think of insurance not being one such market.

This would mean the FCA drawing in vast amounts of data from the insurance market so that its behavioural economists have something to play with. So just as much as insurers are drawing in vast amounts of data to understand and influence their interactions with consumers, so it seems likely that the regulator is preparing to draw in vast amounts of data to understand and influence their interactions with insurers.

Alongside this development has been a recent reiteration by both the FCA and the PRA, for regulated firms and individuals to deal with regulators in a fair and open manner. A coincidence? Or are they laying the ground so that insurers are obliged to give them their data? And might the Association of British Insurers find that its member companies begin to experience a digital world in which 'all data is open unless for good reason' in a somewhat different sense than their new director general might have meant when speaking at a recent insurance conference?[3]

A tower within a tower

Let us return to the panopticon and the way in which insurers are moving into that central tower, observing an ever increasing range of things about our daily lives. Could it be that the regulator is now constructing an observation tower of its own, not alongside that of the insurer but actually sitting within the insurer's own tower? It appears so.

This is a powerful development. Market data would stream into the regulator's inspection tower from the insurers surrounding it, allowing the regulator to keep a watch on everything insurers were doing with customers, enabling them to call on insurers to dispatch extra data to check on

concerns about what they might be up to. Had it been available ten years ago, it would have resulted in the loss ratios and commission levels associated with payment protection and identity theft products being starkly outlined to the FCA observers in their 'tower within a tower'.

It also has the potential to transform many of the arguments about insurance and social justice. A recurring theme in critiques of the insurance sector in relation to controversial underwriting practices was the lack of data to prove on an aggregate basis what was felt to be happening in many individual cases. That data barrier is about to disappear and insurers may find themselves under a new round of scrutiny.

The regulation of insurance is about to cross a defining line. So what might it look like on the other side?

Predictive regulation?

Let us be clear: a move by the regulator to build its own observatory within the insurers' central tower would represent a powerful, possibly game changing move. It could herald a new type of relationship between regulator and regulated, one in which the regulator is no longer trying to keep up, contending with the problems that fall out of an energetic insurance market, but comfortably positioned within the market, keeping an ever roving eye on what insurers are up to.

It could bring about a radical change in market attitudes towards ethics, fairness and culture. If insurers feel that they are under potentially constant observation by the regulator in their central tower, might we see a revolution in ethical behaviour? After all, the central premise of the Panopticon was for it to bring out better, more universal behaviour, on the basis that what you were doing might be under observation at any time. The regulator would just have to set the regular data it wanted to receive at a level capable of signalling misconduct issues as they started to arise. Some may see this as a huge disclosure burden on firms, but is it really, if it is all held digitally?

And who knows? If the insurer is using predictive analytics to foresee what policyholders will pay, or claimants claim, then could the regulator use its own predictive analytics to identify emerging patterns of misconduct? A regulator able to spot misconduct before it became widespread and address its causes before they took hold elsewhere would be a powerful force. Predictive regulatory interventions, just

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[6] 'Economics, Technology and Data - Redefining the Future of Conduct Regulation', a speech by Martin Wheatley, Chief Executive of the Financial Conduct Authority, November 2014. Available at www.fca.org.uk

like predictive assessments of insurance fraud, could prove controversial.

Brave New World?

The FCA's use of data from regulated firms represents a bold initiative, but those are rarely free of unintended consequences. So what dangers lie along the path being taken by the FCA? Here are some worth considering.

1. Micro versus macro

If the FCA's regulatory approach was to swing too heavily behind the use of huge datasets, then it risks being too close to the detail and failing to notice how the 'big picture' is changing. There is a risk that the regulator may 'tune out' of broader, systemic big data concerns being raised in the public domain. Might the regulator become more interested in the data, than where it came from, how it was obtained and how it was added up? A 'big data love in' has risks.

2. Independence of method

If the regulator sees big data as an important part of how it works in the future, in a similar way that the firms it regulates see it, then might this compromise its independence? There is both an upside and a downside here: you can gain extra insight from mining a common seam of information, but you might also end up adopting too many assumptions from the market, making the same mistakes as the market, without necessarily realising so. Could we then see superb regulation in some parts, but blindness in other parts?

3. Understanding the outputs

Is there a risk that the regulator will be no more certain about how the outputs of its big data analysis were derived, than the personal lines underwriter who no longer understands how her premiums are calculated? Would the market feel comfortable with such a regulator? And given that big data shows you correlations, not causations, how will the regulator convince firms that its findings should apply to them? Will it end up as one big argument about modelling issues: my cluster parameter is better than yours.

4. The mechanistic method

Might the regulator pay too much attention to the quantifiable methods of the market, and not enough to the personal behaviours and cultural nuances that often create the misconduct in the first place? How will a regulator 'getting closer to the data' help change culture, influence the actions of individuals, reduce the temptation felt by a good person to make a bad choice? Or is the real future of regulation simply the power derived from being in that central tower, observing a firm that could be yours, a person that could be you?

5. Overly watchful

Could a private sector market like insurance really thrive under a regulator free to look over the market's shoulder whenever it wanted to? Mighten it lessen the sector's attraction for the talented individuals needed to bring forward the benefits of this big data revolution, or for the 'old hands' likely to find such scrutiny just too uncomfortable? Such concerns need to be debated, in the same way as similar ones are being raised by the public about the scrutiny of its data.

6. Economics and more

Is there a danger that regulatory thinking could become overly directed by economic thinking? Economists certainly have a lot to contribute, as do actuaries and statisticians, but they can be less from perfect: think of the recent financial crisis, problems with pensions funding and the risks of securitised debt. And professions such as these tend to see the world through a particular lens: to what extent is that understood by the regulator, and factored into its interpretation of what it is being told?

So this big data transformation in regulation, just like the transformation of the market it is regulating, is not without its risks. It might result in over-regulation, mis-regulation, or an imbalance in regulatory attention. Some may see these as small prices to pay in return for the benefits that could flow from data-driven regulation, but it seems only responsible for the regulator to understand them for what they are.

Revolution in the making?

Insurance is being transformed. Big data is providing opportunities for the sector to engage with customers in new ways, offering new products, services and support. And the regulator is seeing similar opportunities coming its way: new ways of identifying sources of consumer detriment, perhaps even before they fully take hold. These are powerful transformations, presenting both the regulator and the regulated with risks as well as opportunities.

It has the potential to deliver a revolution in trust, a new era in relations with the public and with regulators. But like

every revolution, it could in some ways be an uncomfortable experience. Long held precepts could be called into question; some old skeletons may come out of the cupboard. But that is the nature of revolution: it invariably comes with both the rough and the smooth.

The Panopticon provides a powerful analogy for how big data is permeating the relationship between insurers and consumers, and for how it is beginning to permeate the relationship between regulator and regulated. It helps to illuminate the excitement and tensions that big data will produce.

Some may dismiss the analogy as irrelevant, given Bentham was talking about prison reform. Yet Bentham's vision was wider than just penal architecture, seeing it as a design with a multitude of uses across industrial and educational settings. The key point to the Panopticon was the way in which it changed the relationship between those in the ring and those in the tower[7].

The Panopticon proved too radical for eighteenth century England and was never built. Yet something very similar to it is taking shape within the present day world of financial services. How prepared are policyholders, insurance firms and regulators for recognising and handling all the consequences that will fall out of such a development? I suspect that each has some way still to go, but go they must. It is a journey that needs to be followed now, before some of those important social values become trampled underfoot.

If you have any questions or comments about this Thinkpiece, please contact us: thinkpiece@cii.co.uk; +44 (0)20 7417 4783.

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[7] For an overview of the implications of the panoptic model for society, see 'Information, Society and the Panopticon' by Lyall King, in The Western Journal of Graduate Research, 2001, Vol. 10 (1). Published by The University of Western Ontario,   Canada.

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CPD Reflective Questions

Learning Objectives

Having read this Thinkpiece, readers should be able to:

▪ debate, constructively, the way in which 'big data' could transform the insurance sector;

▪ compare and contrast the implications it could have for consumer trust in the sector;

▪ reflect on the implications this may have for regulation of the sector.

Reflective Questions

1. How might insurers respond to the concerns raised by consumers about their personal data? Should each insurer address such concerns in their own way or should there be a coordinated response across the sector?

2. How much can be read into the Financial Conduct Authority's approach to their pay-day lending review? Will the regulator be able to replicate that approach in the bigger and more complicated insurance market?

3. How might insurers guard against the risks from social sorting? What sort of controls might an insurer put in place to ensure that inadvertent discrimination doesn't take place?