

The Impact of Technology on How and Why We Regulate

Dr Richard Meade

Cognitus Economic Insight & Auckland University of Technology

`richard.meade@cognitus.co.nz`

`www.cognitus.co.nz`

**Presentation at the Legal Research Foundation's
Law and Technology Conference**
Pullman Hotel, Auckland

8 June 2018

Introduction

- What Robert Kennedy proclaimed in 1966 seems much more relevant now:

“Like it or not we live in interesting times. They are times of danger and uncertainty; but they are also more open to the creative energy of [humankind] than any other time in history.”

- We are witnessing an explosion in technologies and business models fuelled by 21st century “oil” – data:
 - Helpful to think of data as “unprivacy” (more later);
 - What has been, or is often, construed as a human right, is now a highly sought-after tradable input commodity, with unprecedented (and mostly good) productive potential.

Introduction (cont'd)

- Incumbent technologies and providers are facing existential threats from “data-based disruptors” (DBDs):
 - “Network effects” in data-based competition can make such competition “winner takes all”;
 - Hence incumbents’ choices can sometimes be: “adapt or die”, or “adapt and die (a bit later)”.

Introduction (cont'd)

- Regulators increasingly find themselves in the uncomfortable position of adjudicating the process of creative destruction – actively or passively, wittingly or otherwise:
 - Opting for the regulatory status quo is a choice about new technology uptake (more later);
 - Industry regulators with (e.g.) safety mandates being called on to determine competitive frameworks;
 - Increasingly, regulation has to think about the *process* of change, not just the *outcomes* of change (also more later).

Introduction (cont'd)

- In this presentation I provide three things:
 - Some broad characterisations of data-based disruption and the regulatory challenges it presents;
 - Some broad prescriptions for how regulation needs to respond to data-based disruption; and
 - Subject to time, a brief case study of how we should think about privacy regulation in the digital age.

Motivation – Data-Based Disruptors

- Not hard to think of examples of DBDs, or data-based disruption, across a range of sectors:
 - Ridesharing vs taxis (and public transport, and delivery services);
 - Sharing economy vs hotels (and traditional landlords/renters);
 - Entertainment streaming vs free-to-air broadcasters (and video/music stores, cinemas/restaurants, etc);
 - Social media vs traditional news organisations and broadcasters; and
 - Crowdfunding vs traditional capital markets (and charitable sectors).

Some Hallmarks of Data-Based Disruption

- At their heart, DBDs are “leapfrogging” incumbent providers and technologies in the contest to “know thy customer”:
 - The skills are transferable across sectors/states, so winning in one makes you better at winning in another.
- Initially this was characterised as involving *predictive technologies*, e.g.:
 - Google knowing you “better than your mother”, and figuring out what you were going to do/buy next; or
 - Amazon’s patent for predictive stocking – shipping products to depots in anticipation of locals buying them.

Hallmarks (cont'd) – From Prediction to Persuasion

- 2016 US presidential election, Brexit – and stated intent – all reveal that “prediction” has evolved into “persuasion” (a.k.a. manipulation?):
 - *Predicting* the future is old hat – why stop there when you can *make* the future?
 - CEO of Alibaba (*Economist*, 28 October 2017):

“The most important thing is not meeting the demand but creating the demand.”
- Advertisers have been doing this for decades:
 - What’s new is the *granularity* (i.e. personalisation), *immediacy*, and “topology” (i.e. branching *inter-connectedness*) of the process – not to mention the *(geo-)political applications*.

Hallmarks (cont'd) – Network Effects, and Discrimination

- Knowing customers (or voters) inside out, and being able to predict/influence their behaviour:
 - Exhibits strong “network effects” – the more users there are on a particular “platform”, the better the platform can be:
 - Induces firms to “get big fast”, and leads to “winner takes all” competition that can “tip” to monopoly;
 - Once DBDs have accumulated vast customer data, newer firms can struggle to match them;

Hallmarks (cont'd) – Network Effects, and Discrimination

- Better technologies for knowing customers leads to highly-granular differentiation (a.k.a. discrimination) – e.g. *personalised* pricing or quality offerings:
 - Can create “waterbed effects” – better deals for some accompany worse deals for others (relative to uniform offerings);
- Overall welfare effects are *ambiguous*:
 - Society can be better off, provided more customers are served in differentiated world.

Hallmarks (cont'd) – Relocating Market Power

- A consequence of DBDs' superior customer-level technologies is that market power is increasingly concentrated at the customer/retail/"downstream" level:
 - Causing a seismic shift in the location of market power concerns – cf market power exerted by large supermarket chains over suppliers.

Hallmarks (cont'd) – Relocating Market Power

- Incumbents with “upstream” market power now face (prospect of) heavily-concentrated DBDs downstream:
 - DBDs can drive hard bargains with suppliers – cf Amazon and USPS/FedEx:
 - Especially when backed up with credible threat of upstream entry (make vs buy);
 - E.g. Amazon backward integrating into logistics – US\$25b investment in 2017 (cf Facebook and Microsoft investing in Trans-Atlantic fibre);
- Can also lead to “utilities”/“grudge purchases” being *bundled* with value-added retail offerings:
 - E.g. P&P with Amazon purchases, recharges with Tesla EVs, broadband with entertainment ...

Hallmarks (cont'd) – Relocating Market Power

Electric car owners 'can drive for free by letting energy firms use battery'

Savings from a new scheme will cover the £350-£400 annual cost of charging a Nissan Leaf, says electricity supplier Ovo



📷 Ovo will offer the 'vehicle-to-grid' service to buyers of the Nissan Leaf from next year. Photograph: Okauchi/Rex/Shutterstock

Electric car owners will be paid for letting an energy company use their vehicle's battery in a pioneering scheme to increase take-up of the cleaner vehicles and

The Guardian, 2 October 2017.

Hallmarks (cont'd) – Counterstrategies

- Incumbents aren't passively awaiting disruption, e.g.:
 - Walmart, The Warehouse (etc) boosting online presence to counter threat of disruption by Amazon;
 - Financial sector firms using DBDs to get closer to customers – but only to then have their lunches cut;
 - Horizontal mergers or entry across sectors – e.g. power companies into broadband;
 - Vertical mergers between content and infrastructure providers – e.g. AT&T/Time Warner, Vodafone/SKY, ...

Hallmarks (cont'd) – Counterstrategies

- Competition authorities confronting dilemmas:
 - Traditionally such vertical mergers raise foreclosure concerns – but against muscular disruptors?
 - If they block *ownership*-based mergers, can/should they also block *contractual* tie-ups (a less-efficient alternative)?

Hallmarks (cont'd) – Counterstrategies

Check if I can get Vodafone TV

Naked broadband Broadband and voice

Save \$10 with an eligible On Account mobile: **No** ☐

Standard	Standard+
SKY Basic	SKY Basic
Unlimited Broadband (Fibre 100 or FibreX200)	Unlimited Broadband (Fibre 100 or FibreX200)
REC Record up to 200 hrs of content	REC Record up to 500 hrs of content
1 Vodafone TV Box Watch on your TV & 1 extra screen	2 Vodafone TV Boxes Watch on 2 TVs & 1 extra screen
<ul style="list-style-type: none"> ✓ Vodafone Ultra Hub ✓ Virus Protect (New Fibre only) ✓ Free Standard install 	<ul style="list-style-type: none"> ✓ Vodafone Ultra Hub ✓ Virus Protect (New Fibre only) ✓ Free Standard install
\$139.99 (12 month term)	\$159.99 (12 month term)



What consumers want:

- Paying a fixed monthly fee for this (and ability to access similar web-based content)

What consumers need to get what they want:

- Getting this bundled/included with what they actually want;
- Do the same with electricity?*

* E.g. standard fixed price heating and lighting package, with add-ons for EVs, DERs, spa pools, differentiated by customer/household demographic ...

Some Broad Regulatory Responses

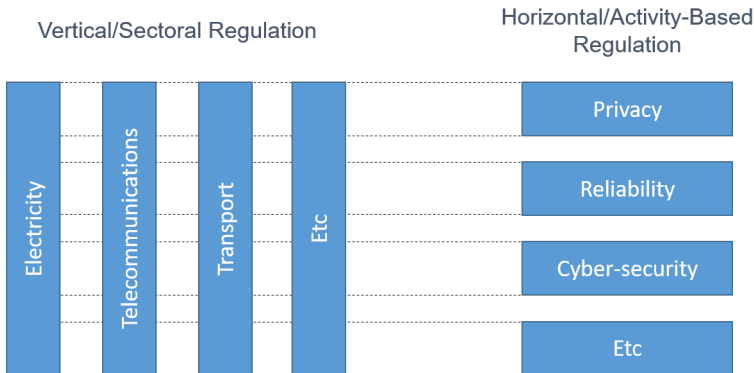
- Focus on three broad areas of regulatory response to DBDs:
 - Increasingly “horizontal” rather than “vertical” regulation;
 - Change in philosophy from passive “set and forget” regulation, to “pro-active responsiveness” – what I call “efficiently dynamic regulation” (EDR); and
 - Relatively greater reliance on general competition regulation than on industry-specific regulation.

Responses (cont'd) – Horizontal Regulation

- Regulation can be:
 - *Vertical/sector-specific* – e.g. transport regulation focuses on all matters (safety, reliability, etc) for just one sector;
 - *Horizontal/activity-based* – e.g. privacy, workplace safety or competition regulators focus on one activity, but for all sectors.
- Traditional sectoral boundaries are increasingly blurring – e.g. Uber into deliveries, power companies into broadband, EVs spanning electricity and transport:
 - Potentially heightens traditional regulatory concerns – e.g. safety, reliability – and creates new ones (e.g. privacy);
 - Regulatory choices in one sector affect the other, but often not coherently (or even wittingly, by design).

Responses (cont'd) – Horizontal Regulation

- Should therefore expect to see regulation becoming increasingly horizontal, and decreasingly vertical ...



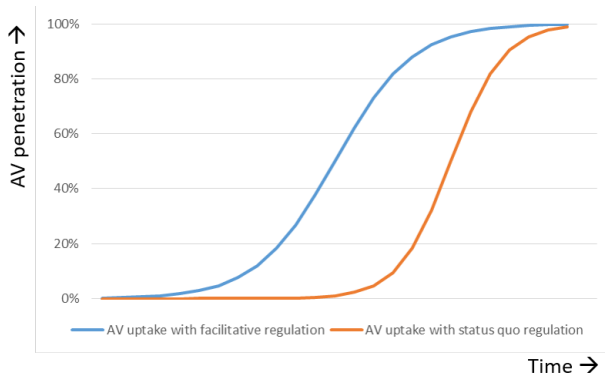
Responses (cont'd) – Regulating Uptake

- *Regulators, firms* (incumbents and entrants/disruptors) and *consumers* are engaged in a multiplayer “game”:
 - Innovation, entry and uptake of new technologies and business models reflect the combined choices of all three groups.
- Regulators therefore play a role in either inducing or impeding DBD entry and uptake of new technologies – with the ideal regulatory response depending on whether disruptors are:
 - *Barbarians at the gate* – threatening the civilised status quo for no real gain; or
 - *Creative destroyers* – ultimately promising a better future for all, even if this causes incumbent casualties.

Responses (cont'd) – Regulating Uptake

- Tesla's 2017 fatal autopilot crash, in which sensors failed to “see” the side of an undecorated truck, illustrates the dilemma – should regulators:
 - Insist that Tesla meets status quo (or stricter) safety rules – potentially delaying innovations that ultimately eliminate crashes altogether; or
 - Ask Tesla whether mandating a [yellow cross] on the side of all trucks will accelerate the rollout of AVs with vastly improved safety?
- Status quo regulation – e.g. passive reflectors for fallible humans to see, rather than [yellow crosses] for clever sensors to see – represents a choice about the pace and nature of new technology development and uptake ...

Responses (cont'd) – Regulating Uptake



Responses (cont'd) – Regulating Uptake

- “Set and forget” prescriptive regulation works fine in an unchanging environment:
 - Its “commitment power” can be a virtue when long-lived investments are required of regulated firms.
- But in a rapidly changing environment both the rationale for regulation, and its feasibility, can quickly become outmoded:
 - Potentially becoming *impotent* (i.e. new technologies leapfrogging regulation) and/or an *obstacle* to desirable innovations;
 - Balance of convenience shifts (relatively at least) away from *commitment* towards *flexibility/responsiveness* ...

Responses (cont'd) – Actively Responsive EDR

- This suggests a shift away from prescriptive “set and forget” regulation towards “actively responsive” regulation – what I call efficiently dynamic regulation (EDR):
 - In an increasingly changeable environment, regulation can't be flat-footed, but must instead be more *nimble and responsive – in a foresignalled way, and with clearly understood purpose*;
 - Contrast telecommunications and lines company regulation in New Zealand:
 - Former presupposes change can occur (as it has) and plans for it;
 - Latter presupposes it won't (though emerging technologies like solar panels mean it will) so effectively ignores it.

Responses (cont'd) – Actively Responsive EDR

- At the same time, commitment power can be preserved at a second-order level at least:
 - Any *regulatory compact* between regulators and firms qualifies “I promise to allow you to recover investment costs” by adding “... provided no technologies or business models emerge that better serve (specific types of) consumers in the long-term”;
 - Signalling this *in advance* as the “regulatory rules of the game” makes it clear that regulators are not going to favour any given firms, technologies or business models – only those best serving long-term consumer interests.

Responses (cont'd) – More Antitrust and Less Industry Regulation

- Competition/antitrust regulation is typically applied after the fact, in response to problems arising in whichever sector they arise:
 - Contrast industry-specific regulation – applied before the fact, presuming there is a problem for which regulation is the solution.
- Accordingly, competition regulation is “responsive” and horizontal, whereas industry specific regulation is often prescriptive and vertical:
 - In an environment with increasingly rapid and cross-sectoral change, regulation needs to be relatively more responsive and horizontal (as earlier).
- This implies a relatively greater reliance on antitrust regulation than on industry regulation.

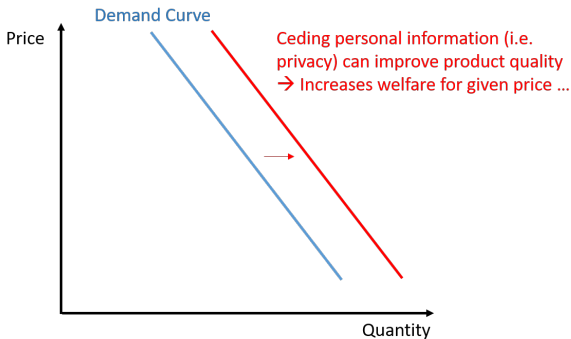
Privacy – A Case Study

- Topical, with recent passage of EU's GDPR.
- Any human rights-based approach to privacy gives reason to pause on economic grounds:
 - For starters, OSFA solutions are generally inefficient (save as a second-best compromise).
- More fundamentally – is trading away privacy (i.e. creating “unprivacy”, by sharing our data with DBDs):
 - A *payment in kind* for data-based goods and services (e.g. “free” email) – affecting true “price” and hence competition assessments; or
 - A *co-investment in kind*, with consumers and DBDs as joint producers?

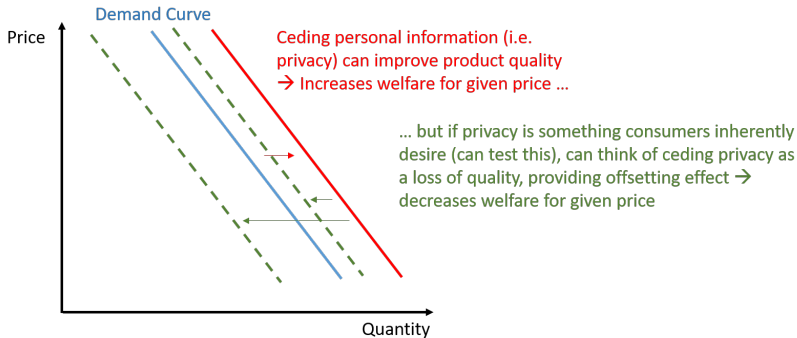
Privacy (cont'd)

- This potentially dual character:
 - Means competition and privacy regulators each need to pay greater attention to data's dual/simultaneous roles;
 - Comes up in other sectors facing rise of "prosumerism" (e.g. solar panels in electricity) – customers no longer (always) just consumers; and
 - Complicates assessment of competition impacts – different types of customers with changing roles in different circumstances.

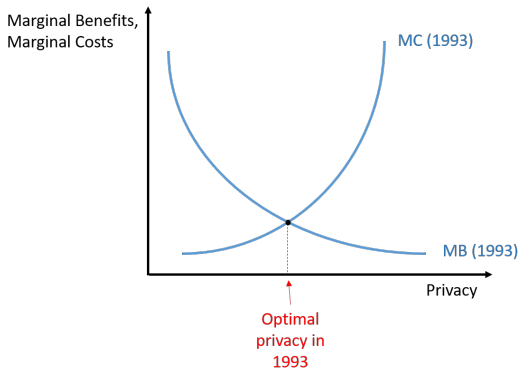
Measuring Privacy Impacts on Welfare



Measuring Privacy Impacts on Welfare (cont'd)



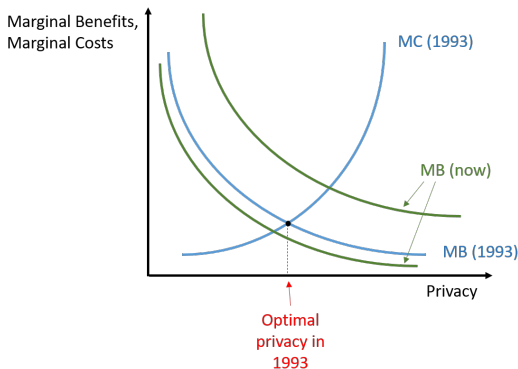
Is the Privacy Act Fit for Purpose?



Suppose policymakers “got it right” in 1993, i.e. that:

- The Privacy Act’s settings were struck to ensure that the marginal benefit (MB) of privacy equalled its marginal cost (MC);
- Economists like $MB = MC$ because it tells us the “optimum” – at any other point we know we can do better.

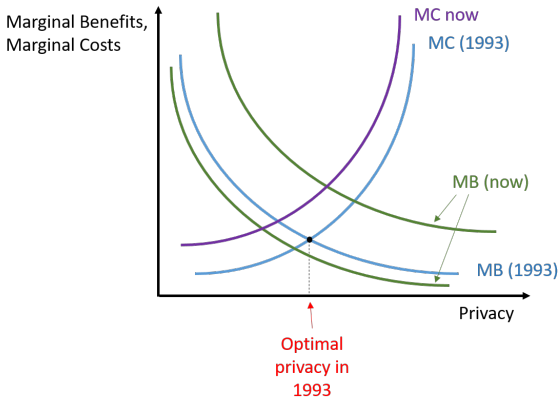
Privacy Act (cont'd)



New technologies and business models shift the marginal benefits up or down in case-specific ways:

- *Down* means ceding privacy gets us lots of good things in return (e.g. free email, maps, relevant ads, etc);
- *Up* means we're better off than before by staying private (e.g. receiving less targeted/polarised news, because we are anonymous).

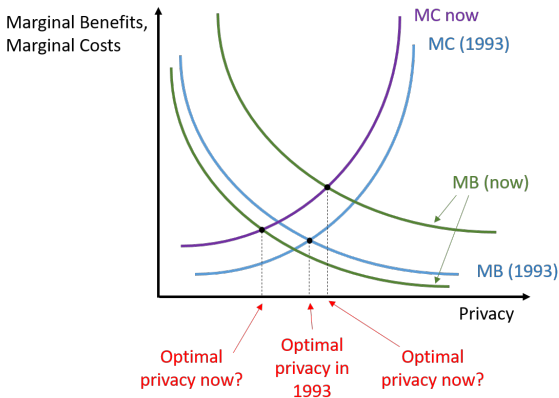
Privacy Act (cont'd)



Seems clearer that marginal costs of privacy have increased with new technologies and business models:

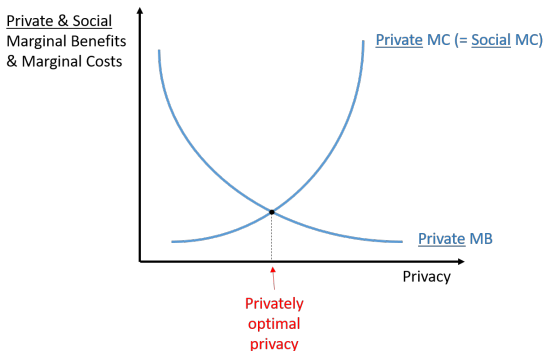
- Harder to remain private – costs more to stay “off grid”.

Privacy Act (cont'd)



Hence the optimal level of privacy could now be higher or lower than what the Privacy Act codified in 1993:

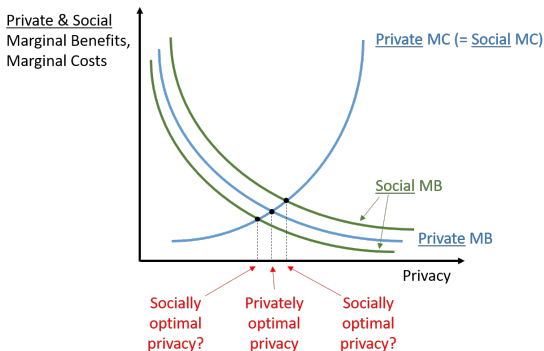
- Will be case-specific – “empty calorie apps” vs “nutritious apps”;
- Will also be individual-specific;
- Can a OSFA Privacy Act remain fit for purpose???



Let's change gear, and now think about differences between privacy's private and social marginal benefits and costs:

- Start with the case where individuals' private MCs are the same as society's;
- Privately optimal privacy is where private MC = private MB;
- Socially optimal privacy is where social MC = social MC.

Socially-Optimal Privacy vs Private Optimum (cont'd)



Possible to imagine social MBs being either higher or lower than private MBs:

- *Higher* means “negative consumption externality” from ceding privacy – e.g. over-consumption of politically/socially harmful “alternative reality”/“echo chamber news”;
- *Lower* means “positive consumption externality” from ceding privacy – e.g. a faster cure for cancer if we all share our activity tracker data with researchers;
- Echoing before, socially optimal privacy could be higher or lower than private, and in case-specific ways!
- Does the Privacy Act even distinguish private and social optima?

Take-Homes about Privacy

- Contrast this with an example of how some international firms are responding to the EU's new GDPR (from Symantec):

"We are committed to providing customers with products and services that are ready to be used in accordance with GDPR ... Privacy is a fundamental human right [ugh!] and protecting personal data – whether our own, our customers', or our partners' – is part of our commitment to corporate responsibility." [emphasis added]

- This might comply with GDPR, but:
 - Is this really best?
 - Don't we risk "privacy waterbeds" if some firms go "high privacy" to meet OSFA regulation, with customers sticking with "low privacy" firms suffering even worse privacy?

Take-Homes about Privacy (cont'd)

- From the above analysis I conclude:
 - Whatever balance the Privacy Act struck in 1993, it is likely to be wrong now – and in either direction, depending on the individuals and the application;
 - OSFA solutions are less desirable/tenable in a world of increasingly precise customer differentiation;
 - Social and private privacy preferences are potentially diverging in material ways – again, in either direction; and
 - Private choices to cede privacy are already compromising the ability of others to remain private – possibly irretrievably.

Conclusions

- “Knowing thy customer” is more than ever the crucible of competition, with DBDs fundamentally changing the balance of market power.
- Regulators are at as great a risk of disruption as incumbent firms and business models:
 - Regulators need to adapt to survive (or adapt to die, a bit later – e.g. if DBDs resolve historical regulatory issues).
- Regulatory responses to DBDs likely to involve more horizontal (i.e. activity-based) and responsive (vs prescriptive) regulation:
 - Also implies relatively more antitrust, and relatively less industry-specific regulation.
- A fundamental rethink of privacy regulation is required, but OSFA human rights-based approaches likely to be inefficient.
