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Protecting consumers against manipulation in the context of emerging technologies

Abstract

A 'third wave', of computing is emerging, based on the widespread use of processors with data handling and communications capabilities embedded in a variety of objects and environments that were not previously computerised, such as fridges, cars, fitness trackers and hairbrushes ('eObjects'). eObjects have prompted significant sociotechnical change and the possibility of a disconnection between current consumer protection law and new marketing activities and devices. The widespread digitisation of commerce has enabled firms an enhanced ability not only to compile detailed customer profiles, but to exploit consumers' cognitive biases and individual vulnerabilities, a form of 'digital consumer manipulation'. Opportunities for digital consumer manipulation will be substantially increased by the widespread use of eObjects, as such use makes available a greater amount of intimate and personalised data and creates additional personalised targeting opportunities. So why does this matter? Much of Australia's marketing regulation depends on the effect on the 'reasonable' consumer. However, the point of digital consumer manipulation is to subvert 'reasonable' decision-making by consumers. This paper examines the key provisions of the Australian Consumer Law to establish its likely effectiveness in the face of digital consumer manipulation facilitated by eObjects and related systems.

1 Introduction

A 'third wave' of emerging information technologies, variously described as 'ubiquitous' and 'pervasive' computing, 'ambient intelligence', the 'Internet of Things', and 'eObjects' is currently driving significant sociotechnical change (Manwaring & Clarke, 2015). Computer processors capable of data collection, processing and communications are being embedded in everyday objects, such as hairbrushes, fitness trackers, household appliances and cars. The technologies that make up the third wave are referred to as 'eObjects' (enhanced objects) in this paper, more fully described in Part 3.1. Sociotechnical change reflected in new digital data collection, profiling and targeting methods using eObjects may enable firms with large marketing budgets an enhanced ability not only to target consumer preferences, but also to exploit consumers' cognitive biases and individual vulnerabilities (Manwaring, 2017a). This ability may lead to a disconnection between current consumer protection law and consumers' legitimate expectation to be protected against predatory conduct.

Even before eObjects, the growth of 'conventional' ecommerce presented new opportunities for marketers to gather consumer data and exploit behavioural research to improve marketing effectiveness (Calo, 2014; Mik, 2016). I refer to this conduct as 'digital consumer manipulation' or 'DCM' in this paper. Earlier work analysing the sociotechnical change brought about by eObjects, argued their *adaptability*, *geo-locatability* and *prevalence* would increase DCM opportunities. Consumers have

always been on the receiving end of persuasive tactics from advertisers. However, the greater volume, intimacy and personalisation of data collected by eObjects, combined with the capability to use eObjects as marketing channels, will offer significant advantages to marketers in accuracy, scope, scale, and effectiveness (Manwaring, 2017a; Helberger, 2016). These advantages may give rise to significant harms for consumers, and consequential legal problems in Australia and elsewhere (Manwaring, 2017a). This paper is intended to examine the harms in the context of Australian consumer protection law, and to assess what legal problems do arise out of disconnection between the harms and the existing law.

Part 2 of this paper outlines legal problems caused by sociotechnical change. Part 3.1 defines the scope of the technologies at issue, and Part 3.2 describes their current and potential use by marketers to engage in enhanced forms of DCM. Part 3.3 sets out a hypothetical vignette of uses of eObjects and related systems to undertake DCM (the 'Vignette'). In Part 4, I analyse the key provisions of the Australian Consumer Law contained in Schedule 2 of the *Competition and Consumer Act 2010 (Cth)* (ACL) and related case law potentially regulating DCM, and outline the legal problems that arise when the laws are applied to the Vignette and DCM in general. Part 5 concludes.

2 Legal problems arising out of emerging technologies

Sociotechnical change occurs when new products, activities and relationships are made possible by the development and use of new technologies (Bennett Moses, 2007). When sociotechnical change occurs, this can cause a 'disconnection' between law designed for an earlier sociotechnical environment and new conditions (Brownsword, 2008). Disconnection does not automatically occur in the face of sociotechnical change, as some legislation is general enough in application, and common law and equitable principles sufficiently adaptable, to apply to a variety of new products, activities, and relationships. However, where disconnection does occur, it is important to identify this and 'reconnect' the law with the present conditions and possibilities of human behaviour (Manwaring, 2017a).

Legal problems arising from regulatory disconnection in the face of sociotechnical change can manifest in a number of categories (Bennett Moses, 2007): legal rules which are *uncertain* in their application to new products, activities and relationships; rules which are too wide or too narrow, that is *under-* or *over-inclusive* in the face of sociotechnical change; rules which are now *obsolete* as conduct no longer exists, or key assumptions have changed, or rules are too difficult to enforce; and finally where *new harms* or *benefits* have come into existence, creating a need for 'special rules designed to ban, restrict, encourage, or co-ordinate use of a new technology' (Bennett Moses, 2007, p284).

A timely examination of possible disconnection is essential to mitigate the effects of what has been labelled the 'Collingridge dilemma'. Although regulators often prefer a 'wait and see' approach to uncover the risks and benefits of sociotechnical change before regulation, too much delay can derail attempts at meaningful regulation as

powerful vested interests can make regulatory change impossible or compromised (Manwaring, 2017a).

Therefore, this paper discusses not only DCM arising from existing technology and known marketing practices, but also marketing practices merely possible with existing technologies (either in commercial release or at an advanced stage of development). Additionally, publicly available and scholarly knowledge of actual 'behind-the-scenes' marketing practices, data sharing models and proprietary technology is likely to be deficient, due to intentional corporate secrecy policies (Pasquale, 2015). The 'opacity' problem brought about by corporate secrecy is exacerbated by the difficulty non-specialist humans have in understanding complex code and algorithms, and by emergent properties of machine learning technologies which result in outcomes inexplicable even by specialists (Burrell, 2016).

3 Effect on consumers

3.1 The rise of eObjects

The third wave technologies discussed have been the subject of many different terms, including 'ubiquitous' and 'pervasive' computing, 'ambient intelligence', and the 'Internet of Things'. However, inconsistencies and confusion around their definitions and use is common in the literature (Manwaring & Clarke, 2015; Noto La Diega, 2016). To deal with these problems, I adopt the approach taken by Manwaring & Clarke (2015), who analysed the history and usages of the different terminologies. This article identified core and common attributes, and proposed a new term, 'eObject', for the central element of these new technologies.

An eObject ('enhanced object') is an:

> *object that is not inherently computerised, but into which has been embedded one or more computer processors with data-collection, data-handling and data communication capabilities*.

However, the technologies and their effects are complex, so this definition does not give a complete view. Therefore, Manwaring and Clarke also provided a list of *common* attributes, none of which appear in *all* eObjects, but nevertheless are common enough to drive significant sociotechnical change. These common attributes are:

> **active capacity** (can act on the physical world), **adaptability** (context-awareness), **addressability** (unique address), **associability** with living beings, **autonomy**, **dependency** (on remote services or infrastructure), **geo-locatability**, **identifiability** (unique device identifier/s), **mobility** or **portability**, **operational**, **economic** and **social impact**, **network locatability**, **prevalence**, **use pattern**, **visibility**, **volatility** and **vulnerability** (Manwaring & Clarke, 2015, p268)

These attributes do not only apply to eObjects themselves, but the systems in which they participate.

3.2 Digital consumer manipulation

Inferences from data can be used to benefit consumers. However, concern has been growing that the increase in electronic marketing and transactions may grant marketers a greater capacity not only to discover consumer preferences, but to use

data and behavioural research to exploit the biases and other vulnerabilities of consumers (Calo, 2014; Kim, 2014; Helberger, 2016; Halliday & Lam, 2016; Mik, 2016). For example,

> advertisers may filter the information that is available, they may target consumers at the time when their willpower is lowest, they may craft their advertisements to act upon known purchasing triggers of particular individuals eg feelings of guilt or obligation or concerns about missing out or a desire to emulate friends or celebrities (Calo, 2014, p1)

The US scholar Ryan Calo (2014, p1) has dubbed this practice 'digital market manipulation'.

However, this terminology may engender confusion for Australians (and others) by its use of the word 'market'. Firstly, s1041A of the *Corporations Act 2001* (Cth) creates an offence of 'market manipulation', prohibiting artificial pricing conduct for financial products. Secondly, the use of 'market' may produce confusion as to whether the conduct referred to must affect conditions at a market level, rather than just individual consumers. This paper does not examine whether DCM has a whole-of-market effect and the adequacy of Australia's competition laws to combat this: rather, it examines the effect of conduct on individual consumers. Hence, I use the term 'digital consumer manipulation' rather than 'digital market manipulation'. Additionally, this paper does not examine all forms of DCM, but confines the analysis to 'enhanced' forms of these practices: where eObjects are used for data collection and/or delivery of marketing content.

An examination of the core and common attributes of eObjects and related systems outlined in Part 3.1 reveals several are helpful to marketers. The capacity of all eObjects to **collect** and **communicate** data assists marketers both in building customer profiles and in targeting their marketing campaigns. Marketers can also leverage other attributes of eObjects such as **mobility**, **prevalence**, **geo-locatability**, **associability** and **adaptability**. The **use pattern** of many eObjects is often limited to one or a few individuals, and the eObject may also be **addressable** and/or **identifiable**. A subsequent ability to *personalise* data records improves the usefulness of the data gathered. The utility of the data is also increased by another attribute of eObjects, **adaptability** (also known as 'context-awareness'), that allows eObjects to adapt their responses to the user: who, where, how, habits and preferences.

Increased deployment of eObjects and related systems will provide opportunities for a greater *volume* of more *intimate* and *personalised* data to be collected and used. This data can be used to build customer profiles and inform behavioural research, and the eObjects themselves can be used to deliver advertising messages.

Law and architecture scholars Kang and Cuff (2005) postulated the development of a 'networked mall', a mixed real/virtual shopping centre created using eObjects and related systems. They provided examples of music in a particular part of the store changing in response to the person entering, thermometer readings detecting a temperature triggering a mobile phone advertisement for paracetamol or the local medical centre, or a 'sudden up-tick [of heart rate] near lingerie … suggest[ing] a rated R feature at the gigaplex' (Kang & Cuff, 2005, p126).

Although Kang and Cuff's idea of a networked mall was speculative at the time, a decade of technological development has converted some of their ideas to reality. By 2014, the data from mobile phone sensors could be used to infer:

> a user's mood; stress levels; personality type; bipolar disorder; demographics (eg gender, marital status, job status, age); smoking habits; overall well-being; progression of Parkinson's disease; sleep patterns; happiness; levels of exercise; and types of physical activity or movement (Peppet, 2014, 115-6)

eObjects have also been developed specifically for use as enterprise marketing devices. 'Beacon' implementation systems such as Apple's iBeacon (released in 2013) are installed in stores and communicate with mobile phones. Beacon systems use indoor positioning devices with small low-power sensors that are capable of tracking when a smartphone enters a particular physical space, and then send targeted advertising messages to the phone. For example, a shopper who has signed up to the service (by downloading an app)[1] may be located by a beacon as he enters a clothing store. A general discount voucher may then be sent to his phone, but systems with more sophisticated algorithms and programming might access his marketing profile, see he is a keen shoe shopper, and generate a personalised discount voucher to the shopper for certain designer shoes in the aisle close to him. Beacon implementations were not yet widespread at time of writing, but by 2017 they were being used in several different enterprises, including retail, museums, airlines, fast food providers, real estate agents and pharmacies both in Australia and overseas, with varying levels of success (Reddy, 2014; Wood, 2015).

The accuracy of consumer profiles and opportunities for behavioural targeting may be assisted by the use of additional technologies, such as cross-tracking device technologies. These technologies allow tracking of a consumer across multiple devices, such as tracking TV viewing by means of software installed on a smartphone. Companies such as Google, Dominoes and Nestle have been using cross-tracking techniques or services provided by companies such as Silverpush, Signal360 and Audible Magic, although not without controversy (Leyden, 2016; Federal Trade Commission, 2016).

These types of marketing systems rely on access to personalised customer profile data, with the potential to be programmed in response to behavioural research on how consumers make decisions to buy goods or services. Despite the lack of the 'human touch' in selling, this can provide distinct marketing advantages. A human shop assistant, faced with a new customer, is unlikely to have the same knowledge of their personal preferences, and is unlikely to have access to aggregated knowledge about purchasing patterns or cognitive biases. The persuasive powers of a human person may not even be an advantage: some psychological research has indicated that people can react the same way to social persuasion (such as flattery or kindness) by a computer as they do to real people (Calo, 2014; Fogg, 2003). Digital personal assistants or 'helpers' in the home, such as Amazon's Alexa, and Alphabet's Google Assistant, provide contemporary examples of the potential of these types of devices for both data collection and marketing delivery.

[1] Such as Beaconnected. See http://beaconnected.com.au/

Next, I present the Vignette outlining possible uses of eObjects and related systems to undertake DCM. In Part 4, I discuss why DCM can cause consumer harms and use the Vignette to assist in examining current provisions of the ACL to assess whether legal problems arise.

3.3 A DCM vignette

Jessica and Salil both live in flats in a brand new apartment block, which has been fitted out with the latest smart home technology.

Salil usually catches the train to his work as a nurse in a big inner city hospital. He is very careful about managing his Type I diabetes, so he tends to jog home every day he can, and tracks his exercise via his smart wristband.[2] He also uses an Internet-connected insulin pump and continuous glucose monitor, and tracks the data via his smartphone (Comstock, 2015).

Salil likes shopping, even though he is on a limited budget due to his casual status at the hospital. He visits the local shopping centre every Saturday to check out the best bargains. He has an excellent smart phone, which he got offered at a discounted price in a promotion by the shopping centre administration. All he had to agree to was to download an app to his smartphone and he's found that pretty useful at identifying discounts.[3]

He's feeling pretty tired and is almost ready to go home, when he gets a message on his phone just as he walks past Donuts & More! His favourite donuts are on special and he just can't resist. He feels a bit guilty as he succumbed to a similar ad last week at about the same time (Calo, 2014).

On Monday morning Jessica walks into her bathroom and looks in the mirror. 'Ugh', she says out loud, 'look at all those wrinkles, I'm getting old'. She brushes her hair with the hairbrush given by her hairdresser at her last visit, which glows red, indicating she is brushing her hair too hard, risking split ends.[4] Max, her smart home hub and digital personal assistant,[5] hears her but doesn't respond, as Jessica had on installation chosen the option that it should only answer questions, and not engage in unprompted chatter. Business has been a bit slow lately, so later that evening, Jessica asks Max to find and play a few clips on Youtube containing tips on marketing to potential clients. She notices in passing the lead-in ad for some form of beauty product.

The next day, Jessica's 9-year-old daughter Mylin begs to go shopping for her birthday present. Max suggests the local shopping centre as the best place to go. As they enter the shopping centre, the interactive billboard near the front displays an ad telling the story of a vaguely familiar beauty product that magically transforms a somewhat down-at-heel looking middle-aged woman who just lost her job into a glamorous and successful CEO of her own consulting business. Jessica and Mylin go to the toy store, and Mylin knows exactly what she wants to get, including the brand, much to Jessica's relief as she is pressed for time. What Jessica doesn't know is that Mylin's birthday

[2] Eg Fitbit www.fitbit.com.
[3] Eg beaconnected.com.au.
[4] Eg Kerastase Hair Coach powered by Withings.
[5] Eg Amazon's Alexa-powered Echo, Alphabet Inc's Google Assistant.

present was suggested by Ella, Mylin's Internet-connected doll.[6] Mylin's father bought Ella in an attempt to get her interested in doing research for her school projects.

As Jessica and Mylin start to walk towards the exit of the shopping centre, Jessica's smartphone pings – she has been offered a 10% discount on Couteux's new wrinkle cream – 'only $150 down from $200 for one week only!', and a 50% discount on Prix Eleve's dry hair conditioner. She makes a quick stop at the centre's pharmacy: it's still not cheap with the discount but at least she'll get the rewards points.

At 9:30pm, while Jessica is packing for an overseas work trip, Max reminds her of her sister's birthday tomorrow. She asks it to order her sister's favourite flowers. She is a bit horrified at the price – she ordered the same flowers herself on a whim two weeks ago and she was sure she only paid half that! However, she confirms the order as she is out of time to think of anything else, and her sister has been calling a lot recently looking for support for her marital problems. Max also reminds her that her insurance is due for renewal, and quotes the annual premium, which has increased 10% since last year. She asks hopefully 'Max, is there anything cheaper'? Max replies 'There are cheaper insurance products, but this is the one best suiting your needs and preferences'. She tells Max to approve the renewal, finishes her packing, and goes to bed.

4 Legal problems

4.1 Consumer protection goals and the case of DCM

So why does this matter? Persuasive tactics by advertisers are not new, and regulation or limitation of such tactics has always required something more egregious than mere persuasiveness. However, scholars have convincingly argued that DCM has significant and increasing potential to:

- erode consumer autonomy;
- be unfair to consumers;
- escalate information asymmetry to consumers' detriment;
- limit consumer choice;
- hinder or distort competition;
- violate privacy; and
- compromise the dignity of consumers.

(Mik, 2016; Calo, 2014; Helberger, 2016; Stucke & Ezrachi, 2017)

All of these factors would suggest DCM practices should be restricted in some way, although Helberger (2016) recognised the line is difficult to draw between merely competitive business practices, and those which unacceptably compromise consumer welfare.

Consumer unease with DCM is also a factor in considering limitation of such practices. A 2016 review of US empirical work (Coen, 2016) on consumer attitudes to personalised targeting found considerable disquiet amongst consumers faced with targeted advertising, and this is supported by a small Australian study (Bosua, 2017).

[6] Eg My Friend Cayla, https://www.myfriendcayla.com/.

Evidence is already emerging that data and inferences are getting 'more accurate [and] more revealing, and [marketers'] ability to manipulate consumer behaviour more successful' (Kim, 2014, p312). Recent empirical research has indicated psychological characteristics:

1) can be accurately assessed by online behaviour (more so than with human-based assessment) (Wu, 2015); and
2) when used in personalised advertising, targeted consumers will, to a significant extent, engage more with advertisers and buy more than when compared with non-personalised advertising (Matz, 2017).

I argue the ability of eObjects and related systems to both collect more data and provide more personalised marketing messages and channels will provide an even greater boost to scale and effectiveness, when compared with, and combined with, current techniques employed in 'conventional' ecommerce. When examining the impact of current laws, the level of increased effectiveness is particularly important, as it affects the answer to the question:

> at which point digital marketing practices, [particularly] if they are based on intrinsic data analysis, opaque algorithms and sophisticated forms of persuasion, turn the normally 'average' consumer into a vulnerable one? (Helberger, 2016, p)

The issues outlined above assist in the conclusion that at least some forms of DCM will conflict with consumer protection goals enshrined in Australia's national law on consumer protection. The ACL came into force in 2010, with the objective:

> to improve consumer wellbeing through consumer empowerment and protection, to foster effective competition and to enable the confident participation of consumers in markets in which both consumers and suppliers trade fairly. (Council of Australian Governments, 2009)

Operationally, the ACL is intended to:

1. ensure consumers are sufficiently well-informed to benefit from and stimulate effective competition;
2. ensure goods and services are safe and fit for purpose;
3. prevent unfair practices;
4. meet the needs of vulnerable and disadvantaged consumers; and
5. provide accessible and timely redress for consumer detriment; and
6. promote proportionate, risk-based enforcement.

(Australian Government 2010b)

Where DCM is successful in manipulating consumers into making transactions they would otherwise not have made, it has the potential to conflict with some of the ACL's stated goals, particularly those relating to unfair practices, protecting vulnerable or disadvantaged consumers, and providing accessible and timely redress. Additionally, such conduct has the potential to fetter a consumer's freedom of choice, a value postulated (Helberger, 2016) as an essential one to be enforced by consumer protection law. Freedom of choice is arguably implied in the ACL objective of 'consumer empowerment' and 'foster[ing of] effective competition'.

4.2 How the ACL might deal with DCM

Some specific sales techniques in the ACL are designated as 'Unfair practices' and regulated accordingly, particularly bait advertising (s35 ACL), unsolicited supplies (Part 3-1, Div 2), pyramid schemes (Part 3-1, Div 3), and certain pricing practices (Part 3-1, Div 4). However, none of these provisions apply *generally* to DCM techniques (although such techniques could be used to carry out regulated conduct, such as a service provider using the Vignette's Max for bait advertising).

However, aside from regulation of *specific* sales techniques, however, there are some *general* principles judges can call upon to restrict the ways service providers might attempt to manipulate consumers into forming contracts. Therefore, this Part 4.2 examines current protections consumers have under the law regarding their decision-making processes. The general provisions are there to ensure information provided to consumers is correct and not misleading, and their decision-making is freely made. These include:

- legislative provisions prohibiting misleading and deceptive conduct (s 18 ACL), and specific false and misleading representations (s 29 ACL); and
- statutory principles relating to unconscionable conduct (ss 21-22 ACL).

Part 4.6 also briefly discusses the potential relevance of other areas of law.

4.3 Misleading and deceptive conduct

4.3.1 Elements

Marketing practices must comply with the ACL provisions prohibiting 'misleading or deceptive conduct' (s 18 ACL) and 'false or misleading representations' (s 29 ACL). While s18 applies generally, s29 prohibits a set of *specific* false and misleading representations, including those relating to price, quality and performance. Breach of both ss18 and 29 may give rise to civil remedies, but a s29 breach can also be criminal. Mirror provisions for financial services are found in ss12DA and 12DB of the *Australian Securities and Investments Commission Act 2001* (Cth) (**ASIC Act**).

Australian judges have treated the terms 'false or misleading' in s29 synonymously with the terms 'misleading or deceptive' in s18 (*ACCC v Dukemaster*, 2009; *Comite Interprofessionel v Powell,* 2015). However, there are three relevant differences between the two sections:

- the closed list of representations prohibited by s29, as opposed to the open definition of conduct regulated in s18;
- the s29 requirement of 'representations' versus the 'conduct' required in s18; and
- the inclusion of 'likely to' in s18.

Section 18 prohibits:

1. A person
2. In trade or commerce
3. Engaging in conduct
4. Which is misleading or deceptive, or likely to mislead or deceive

Elements 1 and 2 are easily satisfied for DCM. The High Court has made it clear the second part of element 4, the *likelihood* of the conduct being misleading or deceptive,

adds little to the section other than to acknowledge there is no need to prove anyone was *actually* deceived or misled (*Google v ACCC*, 2013; *Parkdale v Puxu,* 1982). The conduct must just be *capable* of misleading or deceiving someone, to the extent there is a 'real or not remote chance or possibility regardless of whether it is less or more than fifty per cent' (*Re Global Sportsman*, 1984, [14]). In contrast, s29 is narrower.

What is still contentious regarding DCM is the nature of the conduct falling under the sections. Section 29 requires a false or misleading *representation*, a 'statement, made orally or in writing or by implication from words or conduct, relating to a matter of fact' (Miller, 2016, p1670). However, s18 is broader. Although many earlier judgments interpreting s18's predecessor held it required a misrepresentation (Bruce, 2014, pp85-6), the High Court rejected this contention in *Butcher v Lachlan Elder Realty* (2004, [32] and [103]). In 2010, the High Court confirmed that '[f]or conduct to be misleading or deceptive it is not necessary that it convey express or implied representations… It suffices that it leads or is likely to lead into error' (*Miller v BMW Australia,* 2010, [15]).

Gordon J in *ACCC v Dukemaster* (2009, [10]) helpfully summarised a series of principles developed by courts regarding s18's predecessor. The principles relevant to DCM are:

> 1…. The 'conduct', in the circumstances, must lead, or be capable of leading, a person into error … and the error or misconception must result from 'conduct' of the corporation and not from other circumstances for which the corporation is not responsible…
>
> 2… [the section] is concerned with the effect or likely effect of 'conduct' upon the minds of that person or those persons in relation to whom the question of whether the 'conduct' is or is likely to be misleading or deceptive falls to be tested. The test is objective and the Court must determine the question for itself…
>
> [the section] … is not designed for the benefit of persons who fail, in the circumstances of the case, to take reasonable care of their own interests…
>
> 4… By making a statement of past or present *fact*, a corporation's state of mind is irrelevant unless the statement involved the state of the corporation's mind… Contravention … does not depend upon the corporation's intention or … belief … but upon whether the statement conveys a meaning which is false. A false meaning will be conveyed if what is stated concerning the past or present fact is inaccurate but also if, although literally true, the statement conveys a meaning which is false.

4.3.2 Conduct not amounting to misrepresentations

This distinction between s29 and s18 is important, as some DCM techniques otherwise falling within s29's closed list will arguably not be misrepresentations. For example, the sales technique of personalised pricing – where the price of an offer is calculated based on collected data about an individual's willingness to pay – is not dependent on a misrepresentation, but nevertheless be unfair and manipulative.

For example, in the Vignette, Jessica is manipulated into paying an inflated price to buy her sister flowers. The service provider supporting Max's search and ordering services have had the opportunity to build a detailed personalised profile of Jessica, including the timing of her sibling's birthday, the nature of her recent interactions, and previous information on her willingness to pay in particular situations. If the

'exigency mark-up' imposed in this instance is shared between Max's service provider and the florist, both have incentives to raise the price.

Variable, personalised or dynamic pricing is not by itself actionable, as there is no universal expectation everyone pays the same price for the same product, although some consumers may feel this is unfair. In Australia, personalised pricing is available at weekend markets and car dealerships, and supermarkets offer the same goods at different prices based on the location of the store. Prices based on willingness to pay are readily available on auction websites. In 2016, the Australian Competition and Consumer Commission (ACCC) issued guidance to businesses for complying with the ACL regarding algorithmically-generated dynamic pricing based on market demand, offered by businesses operating online 'sharing economy' platforms (Australian Competition & Consumer Commission, 2016) (eg surge pricing by car hire service Uber). The regulator took no issue with the legality of the practice itself. It merely warned platform operators against saying their prices were lower than their competitors if the algorithmic pricing made this false in some instances. It also warned platform providers that if they had told their clients their pricing was demand-based, price increases for reasons other than demand would be misleading.

Misrepresentations relating to price are prohibited by s29(1)(i). However, no misrepresentation is identifiable in the Vignette situation described above. The service provider has programmed Max to 'take advantage' of consumers in exigent situations by pushing up the price, but absent a misrepresentation that, for example, pricing is 'commission-free', this would not constitute a breach of s29(1)(i).

4.3.3 'Leading into error': factual errors versus normative errors

S18 covers a broader range of conduct than s29, due to its open-ended definition and the absence of a misrepresentation requirement. However, even absent a misrepresentation, someone must be led (or is likely to be led) into *error*. Problems may arise depending on how judges interpret this requirement when faced with DCM.

The problem with the section in its application to DCM depends on the nature of the type of 'error' required. Craswell (1985) helpfully summarised several approaches generally used by advertisers to influence customers. Firstly, advertising may act to change a consumer's *factual* belief about a product, such as comparative price or quality. Secondly, advertising may change a consumer's *decision-making processes* about whether to buy a product. Thirdly, advertising can influence customers by producing a 'fundamental liking or disliking for a brand that cannot be explained … as resulting from specific beliefs about particular attributes', such as might happen when a product is continually associated with a favourable image (Craswell, 1985, pp 662-663). Craswell (1985, p665) considered '[t]he key distinction is that false factual beliefs represent errors of *fact*, while other forms of influence represent errors, if they can be called that, of *evaluation* or of *normative judgment*'. [my italics].

There are many decisions made by consumers because of DCM may fall into the latter category, a category I call 'normative errors'. For example, in the Vignette, if Jessica is convinced by the techniques employed that she should hide her wrinkles and split ends to be successful in her business, then this is a normative error. However, the Australian judgments are all focussed on the existence or possibility of a *factual* error,

rather than the *normative* errors brought about by an advertiser's *influence* on decision-making processes or fundamental attitudes towards brands.

Judges have found misleading and deceptive conduct in the absence of a strict 'misrepresentation' in a few cases: particularly where the conduct involved silence, opinions, statements as to future matters, statements of law or unauthorised use of character images (Lockhart, 2015; Heydon, 2018). However, despite the absence of a misrepresentation, all of these resulted in consumers being led into a factual error in the Craswell sense, not a normative one. In the silence cases, the consumer has been led into the factual error that all material facts *have* been disclosed. In cases of opinion and statements as to future matters, the consumer's factual error is the opinion is based on reasonable grounds. Regarding unauthorised use of character images, the reasoning has concentrated on the factual error that the owner of the intellectual property rights in the image has consented to their use (eg *Hogan v Pacific Dunlop,* 1989). Although it is common to make a distinction between statements of fact and statements of law, a misleading statement of the law still contains a factual error in the Craswell sense: the factual error subsists in the mistaken belief that a particular principle can be enforced by legal means when in fact it cannot (or vice versa).

4.3.4 Requirement of reasonableness of the consumer

In establishing whether conduct will or is likely to lead people into error, Australian judges are required to identify the target audience of the conduct, and further who within the target audience is capable of being misled or deceived by the conduct (*Taco Company v Taco Bell* (1982); *Weitmann v Katies* (1977)). Early Australian formulations included those with 'somewhat less than average intelligence' but excluded those 'quite unusually stupid' (*Annand & Thompson v TPC* (1979)).

However, the test has narrowed somewhat. Gibbs CJ in *Parkdale v Puxu* (1982, [9]) held the test was:

> the effect of the conduct on reasonable members of the class. The heavy burdens which the section creates cannot have been intended to be imposed for the benefit of persons who fail to take reasonable care of their own interest

More recently, the High Court *in Campomar Sociedad v Nike International* (2000, [105]) held the relevant members of the class were 'ordinary' or 'reasonable' members, and the court could exclude the effect of those 'whose reactions are extreme or fanciful'. However, the difference between an 'ordinary' consumer and a 'reasonable' one is unclear.

When individual consumers seek specific redress such as damages, two criteria must be met. Firstly, '[t]he plaintiff must establish a causal link between the impugned conduct and the loss that is claimed' (*Butcher v Lachlan Elder Realty* (2004), [37]). Secondly, the court must consider the subjective knowledge of both parties, particularly:

> the character of the particular conduct of the particular agent in relation to the particular purchasers, bearing in mind what matters of fact each knew about the other as a result of the nature of their dealings and the conversations between them, or which each may be taken to have known ([37])

Therefore, judges can and should consider the enhanced knowledge marketers can gain about individuals using the data collection techniques made possible by eObjects. However, under current precedent, the assessment must continue by reference to what 'a reasonable person in the position of the [consumer], taking into account what they knew, would make of the [advertiser's] behaviour' (*Butcher v Lachlan Elder Realty*, 2004, [50]).

This required element of reasonableness will be a vexed one for DCM. The judge in *Dukemaster* pointed out consumers must take reasonable care of their own interests. If the relevant conduct is intended to exploit cognitive biases, it is intended to undermine the consumer's very capability to take such reasonable care, making the test insufficient. The dominant purpose of the techniques is convert an ordinary, 'reasonable', consumer into a vulnerable one (Helberger, 2016) (a 'created vulnerability'). Marketers create vulnerability in several stages. Firstly, they undertake personalised data collection programs to discover what cognitive biases operate most strongly upon particular individuals. Secondly, they find opportunities to exploit those biases in individuals, based on behavioural research. This combination of 'intense systematisation' and 'personalisation' of data is without precedent in Australia (Calo, 2014; Manwaring, 2017a).

An example of this can be found in the Vignette, where Jessica and Salil are the subjects of manipulative techniques designed to persuade them to buy consumer products. Each of Jessica and Salil's data profiles have been used to target them at a time and place designed to minimise resistance to a discounted price. These techniques are not scattergun approaches designed to pull in as many consumers as possible, such as physical posters in a food court, or television ads, but are personalised to each of Jessica and Salil, or at least people with characteristics very like them. Salil has been targeted on time, location, and earlier purchasing patterns. Jessica's manipulation by beauty product marketers is somewhat more sophisticated, consisting as it does of:

1. identification of a possible vulnerability by surveillance of her comments to Max and the hairbrush's use as data collector and signaller;
2. embedding of vulnerability by the targeted storytelling ad on the electronic billboard in the shopping centre; and
3. further pressure to purchase due to the location- and time-targeted discount.

Some or all of this level of manipulation might be considered *unfair*. However, it is not on its face *misleading* or *deceptive*. The imposition of the exigency mark-up on flowers for Jessica's sister discussed above at 4.3.2 is also unlikely to breach s18. Merely unfair or distasteful conduct does not constitute a breach of either s18 or s29.

The ability of consumers to protect themselves may well improve over time, once consumers become more aware, and therefore warier, of these practices. Digital literacy programs in schools discussing digital marketing practices may assist in awareness increasing. However, growth in awareness will be hindered by the lack of incentive, or real disincentive, for service providers to reveal details of these practices, and corporate secrecy is likely to be maintained for as long as possible (Pasquale, 2015; Mik, 2016).

4.3.5 Conclusion

Where DCM involves a misrepresentation, ss18 and 29 will apply to such conduct. Where the conduct does not amount to a representation, s18 will only apply where the consumer is led (or likely to be led) into a factual error. If the error is a normative one, such as where the consumer's biases are exploited to an extent that their actions are considered not 'reasonable', then the sections will not apply. In these circumstances, service providers are not providing the consumer with incorrect or incomplete information as to any innate attribute of the goods or services. Rather, consumers are put in a situation where they are more likely to agree to buy them due to their own vulnerabilities, such as Jessica, Mylin's and Salil's situation outlined in the Vignette.

The analysis above shows DCM is not wholly unregulated by the existing law. Where DCM leads consumers into a factual error, such techniques will infringe the ACL provisions on misleading and deceptive conduct and specific misrepresentations. However, sanctions arising under these provisions are commonly triggered when the relevant conduct produces or is likely to produce a detrimental effect on the 'reasonable consumer'. Where there is no factual 'error', however, but nevertheless techniques create a vulnerability to the extent consumers are persuaded to act unlike reasonable consumers, these provisions may be seen to be **under-inclusive**. However, consumers may nevertheless find a remedy under other provisions of the ACL, such as those governing unconscionable conduct.

4.4 Unconscionable conduct

4.4.1 Elements

Section 21 of the ACL prohibits 'unconscionable' conduct in connection with the actual or possible supply of goods or services. Section 22 sets out a non-exclusive list of matters to which the court may have regard when assessing if conduct is unconscionable under s21. Relevantly to DCM, these include: relative bargaining power; undue influence or pressure, or unfair tactics; comparative price; consistency of conduct towards others; unreasonable failure to disclose conduct affecting consumer interests or unforeseeable risks to the customer; and the extent to which both parties acted in good faith.

Additionally s21(4) states as 'interpretative principles' that the doctrine:

a) is not limited by the 'unwritten law' of unconscionable conduct;
b) applies to 'a system of conduct or pattern of behaviour, whether or not a particular individual is identified as having been disadvantaged by the conduct or behaviour'; and
c) includes terms and performance, not just formation.

Mirror provisions exist in ss12 CB and 12CC of the ASIC Act regarding financial services. Section 20 of the ACL, and its mirror provision s12CA of the ASIC Act, also prohibit unconscionable conduct 'within the meaning of the unwritten law', but do not directly apply to DCM, due to the operation of s20(2) of the ACL and s12CA(2) of the ASIC Act.

4.4.2 What is unconscionable conduct?

It is impossible to extract from the statute and the cases a precise meaning of 'unconscionable conduct' under s21. One definition adopted in several cases is 'showing no regard for conscience; irreconcilable with what is right or reasonable' (*Qantas Airways v Cameron*, 1996, p262; *Tonto Home Loans v Tavares*, 2011, [291]), but there is no accepted 'standard of wrongdoing' (Paterson & Brody, 2015, p343). The continuing (Corones, 2016) controversy over whether unconscionability requires a 'high level of moral obloquy' (*Paciocco v ANZ*, 2016, [188]; *A-G (NSW) v World Best*, 2005, [121]) or some other standard, such as 'accepted and acceptable community standards' (*ACCC v Lux,* 2013 [23]), is unhelpful. The term 'moral obloquy' has been judicially condemned as notoriously imprecise (*Ipstar Australia Pty Ltd v APS Satellite Pty Ltd* [2018] NSWCA 15, [278]), and attempted substitutes provide little assistance to those attempting to assess their own conduct or the conduct of suppliers.

In contrast, the definition of s20 or 'unwritten law' unconscionability is somewhat clearer due to the seminal High Court judgment in *Commercial Bank of Australia v Amadio* (1983, [462]), which required 'a knowing taking advantage of a party at a special disadvantage'. The existence of an *Amadio* 'special disadvantage' may be *relevant* to the assessment of unconscionable conduct under ss21-22, but it is not *required* (Ex Mem to s21(4)(b)). It is generally accepted that Parliament's intent in ss21-22 was to prohibit a wider range of unconscionable conduct than encompassed by the *Amadio* definition (Vout, 2013; Bruce, 2014, *ACCC v Simply No-Knead*, 2000).

However, other than the fact that ss21-22 unconscionability is *broader* than s20, little more can be said with certainty about the applicable general principles. The courts have, deliberately it seems, embraced the ambiguity of ss21-22 in a sacrifice to flexibility and broadness of applicability, as illustrated in Allsop CJ's judgment in *Paciocco v ANZ* (2015):

> [A]ny agonised search for definition, for distilled epitomes or for shorthands of broad social norms and general principles will lead to disappointment, to a sense of futility, and to the likelihood of error. The evaluation is not a process of deductive reasoning predicated upon the presence or absence of fixed elements or fixed rules. It is an evaluation of business behaviour … as to whether it warrants the characterisation of unconscionable, in the light of the values and norms recognised by the statute.

Unfortunately, the cases have failed to articulate a clear statement of these 'values and norms'.

The choice of flexibility over clarity has been supported by successive Parliaments. As a result, the effectiveness of the section is contentious, and subject to multiple parliamentary inquiries since the introduction of statutory unconscionability in 1986. These inquiries have led to some restructuring of the sections and amendments to supporting wording, such as the introduction of s21(4). However, Parliament has expressly refused repeated calls to legislate for a specific definition, or to include a list of examples of unconscionable conduct in the ACL, to provide more guidance for consumers and businesses (despite including examples for the unfair contract terms provisions). Governments have responded to significant concern from consumers, small business, and downstream suppliers by recommending instead the ACCC run test cases (Commonwealth of Australia, 2009) and issue guidance (Horrigan,

Lieberman, & Steinwall, 2010). However, the ACCC's current guidance document for business does not engender confidence: it begins its explanation of the term with the words '[u]nconscionable conduct can be a difficult concept to understand' (ACCC, 2012).

Section 22, which contains a non-exclusive list of matters that *can* be considered in an assessment of unconscionability, could have provided more fertile ground to provide the doctrine with real content. However, the section itself gives no guidance on the extent to which these factors or others should be considered, and the cases are inconsistent. Some discuss the factors explicitly (*ACCC v Keshow,* 2005; *ACCC v Simply No-Knead,* 2000). Others do not mention them at all (*Tonto Home Loans v Tavares* 2011; *ACCC v Lux,* 2013), although arguably they are implicit in some cases without specific reference (*ASIC v National Exchange*, 2005). No formula has been adopted as to how many, or to what extent, the factors must be present (Bruce, 2014). It appears inequality of bargaining power, without more, is insufficient (*Paciocco v ANZ*, 2016): but little more than that of general principle can be drawn from the cases.

There are several cases where inappropriate pressure or unfair tactics have been considered unconscionable (*ACCC v Lux,* 2013; *ACCC v ACN 117 372 915*, 2013, *ACCC v Origin Energy* 2015). However, these generally involve face-to-face contact between the seller representatives and the consumers, and where some aspects of the conduct either breached or was likely to breach other sections of the ACL, such as the door-to-door selling provisions or the prohibition on misleading and deceptive conduct. It remains to be seen whether judges will be convinced persuasion delivered by text messages, a digital personal assistant, a doll, or other non-human means has the same persuasive force as face-to-face high pressure selling.

Judicial and parliamentary attitudes have certainly made the section flexible, but at what cost? The concept of unconscionable conduct is 'technologically neutral', so there is nothing on its face preventing the section from applying appropriately to DCM and other forms of sociotechnical change. However, the unconscionable conduct doctrine in Australia has been criticised as 'amorphous and ambiguous' (Wooler, 2017), 'a category of meaningless reference' (Rickett, 2005), and 'generically unhelpful' (Griggs & Webb, 2011). Criticism has repeatedly focussed on the uncertainty of the section, particularly relating to the lack of specificity in the definition, the failure of the provisions to provide any real guidance to assess whether particular forms of conduct would be considered unconscionable, and difficulties of proof (Harper, 2015). The failure of courts to articulate details of a test or principles to give content to the term 'unconscionable' means that business and consumers have little or no guidance to assess whether particular forms of new conduct are indeed unconscionable.

Aside from the uncertainty of meaning of the term 'unconscionable', and lack of guidance on the factors to be considered, several other problems with statutory unconscionable conduct have been identified, relevantly:

- the lack of familiarity with, and understanding of, the term 'unconscionability' outside of the courts, particularly by business and consumers;

- a high threshold level of misconduct, as conduct which is merely unfair, or where one party has more bargaining power than the other, is unlikely to be considered as unconscionable without more;
- uncertainty as to the applicability of the factors in s22; and
- practical enforcement difficulties due to vulnerable victims either being unable to bring actions themselves or providing poor testimony for regulator actions.

(McLeod, 2015; Paterson & Brody, 2015; Brody & Temple, 2016; Australian Securities and Investment Commission, 2013).

4.4.3 DCM as predatory business conduct

Little can be drawn by way of analogy from most of the cases on unconscionable conduct for DCM. However, some assistance can be found in the detailed analysis by Paterson and Brody (2015) of judicial treatment of 'business models whose very operating premise relies upon taking advantage of the reduced ability of consumers … to protect their own interests' (**predatory business conduct**). They concluded Australian courts have generally been successful in applying the unconscionable conduct provisions in the ACL and ASIC Act to respond appropriately to a broad selection of predatory business conduct, such as funeral insurance, payday lending, and sale of inappropriate educational services to those dependent on social security payments.

The distaste of judges for predatory business conduct is also reflected in *ASIC v National Exchange* (2005). The Full Federal Court held National Exchange breached the relevant unconscionable conduct provisions of the ASIC Act. It had issued an offer to shareholders of Aevum for their shares, at a price well under market value. An accurate estimate of the shares' market value was included on the *reverse* side of the offer document. Additionally, the company's controller admitted targeting members of demutualised companies he believed more likely to accept less than fair value.

The court held the document was *not* misleading or deceptive. However, the targeting of inexperienced members and the framing of the document was held *unconscionable* because:

> National Exchange set out to systematically implement a strategy to take advantage of … a group of inexperienced persons who would act irrationally from a purely commercial viewpoint and would accept the offer. They were perceived to be vulnerable targets and ripe for exploitation, as they would be likely to act inadvertently and sell their shares without obtaining proper advice, and they were a predictable class of members from whom [National Exchange] could procure a substantial financial advantage by reason of their commercially irrational conduct … This is not a case of obtaining a low price by shrewd negotiation. It is predatory conduct designed to take advantage of inexperienced offerees…

One view is DCM is more severe, or against conscience, than the predatory business models identified by Paterson and Brody. DCM is not marked by mere opportunism, but by a deliberate *intent* to create a vulnerability, and then to take advantage of it. Therefore, it appears possible at least some DCM techniques would fall foul of the unconscionable conduct prohibitions. In the Vignette, marketing disguised as a conversation between the 9-year-old Mylin and a doll to which she is emotionally attached may indeed be considered unconscionable. If a marketer has access to and

implements in its algorithms behavioural research showing fatigue, blood sugar levels and time of day have significant effects on willpower, unhealthy nudges to Salil, a known diabetic, may also be seen as sufficiently predatory to contravene the provisions.

This result is supported by the words of the statute, particularly s21(4)(b), which indicates s21 'is capable of applying to a system of conduct or pattern of behaviour, whether or not a particular individual is identified as having been disadvantaged by the conduct or behaviour'. This section indicates there is no need for proof of consumer disadvantage from the scrutinised conduct. Another possible consequence of s21(4)(b) is an *attempt* to exploit consumers – even an unsuccessful one - is sufficient to breach the section. This is particularly noteworthy as the actual effectiveness of some behavioural marketing techniques is still controversial (Mik, 2016). The lack of a requirement to prove the behaviour's effectiveness would stifle a potential defence by suppliers, making it easier for regulators to bring an action.

One possible counterpoint to this view is contained in the High Court decision in *Kakavas v Crown Melbourne Ltd* (2013). In this case, Kakavas' gambling addiction, which was known to the defendant casino (at least constructively), was dismissed as a basis for a holding of unconscionable conduct under s20 and the 'unwritten law' on unconscionable conduct. It was held Mr Kakavas did not suffer an *Amadio*-style 'special disadvantage', as the court considered his gambling problem did not make him incapable of making rational decisions (including self-exclusion). It did concede where a gambler was obviously drunk, young, old or 'incompetent', the result may have been different. However, the case does show a judicial predisposition to assuming consumers are perfectly rational and must look after themselves, even when their psychological traits make that difficult. Its application may be limited due to two factors. Firstly, the case was decided under a predecessor to s20, not ss21-22. Secondly, the court emphasised the uniqueness of the activity involved: 'gambling transactions are a rare, if not unique species of economic activity in a civilised community, in that each party sets out openly to inflict harm on the counterparty'.

4.4.4 Conclusion

Consumers may find protection against more egregious forms of DCM under the statutory doctrine of unconscionable conduct, as opposed to a misleading or deceptive conduct claim. While the scope of the statutory doctrine is still undefined, the breadth of the potential definition of unconscionable conduct makes it likely many forms of DCM will fall foul of the prohibition.

However, the operation of the unconscionability provisions in the face of DCM is **uncertain**. The lack of a useful definition of unconscionability, in addition to the lack of analogous cases, makes it difficult to assess when and where DCM techniques would constitute unconscionable conduct. The uncertainty about what is considered 'unconscionable' is exacerbated by the current lack of clear societal norms about the acceptability of DCM, and the inability of the courts and parliaments to articulate real and useful content for the concept.

4.5 Other areas of relevant law

Other areas of relevant law are not covered in this paper, most particularly in the areas of privacy, spam, financial advice regulation, unfair contract terms and unsolicited consumer agreements. However, for all but the first, they do not apply to DCM in general but rather to specific instances. The *Privacy Act 1998* (Cth) has the potential for more general application, but there are significant limitations on its application and effectiveness, not the least of these being weak enforcement mechanisms, and systemic shortfalls in funding and resources to the Australian privacy regulator (Daly, 2017).

This paper confines itself to the process concerning entry into a contract between a supplier and a consumer and therefore does not consider the effect of the unfair contract terms regime contained in Part 2-3 ACL.

5 Conclusion: uncertainty, regulatory timing, and corporate secrecy

The ACL provisions most likely to be called into action by consumers and regulators to offset harms brought about by DCM enabled by eObjects are technologically neutral. This means some forms of DCM may be caught, but the provisions are insufficient to protect consumers from many harms caused by DCM due to uncertainty and under-inclusiveness. Particularly, the ACL unconscionable conduct provisions on their face *should* have provided a useful tool to protect consumers from unfair tactics and exploitation of consumer vulnerabilities. However, the uncertainty engendered by overly broad drafting and unhelpful case law means guidance to business, consumers and regulators is limited, with corresponding disincentives to both proactive good practice and the likelihood of enforcement actions.

The uncertainty of the unconscionable conduct provisions is not confined to DCM. However, the negative effects of uncertainty may be greater in the context of sociotechnical change than in other forms of social change, because of its speed. The specificity craved by consumers and small business groups cannot be dealt with by government recommendations to the regulator to run test cases, or issue guidance material, as these processes compromise principles of effective regulatory timing and regulatory design in the context of rapid sociotechnical change.

The judicial process invoked in running test cases has two problems: it is slow, and has not previously produced useful general principles easily applied by businesses engaging in *different* conduct. If useful cases are produced too slowly, then society ends up on the side of the Collingridge dilemma where it may be too late to mitigate harms because of entrenched interests. A judge's decision disrupting profitable business models will not be popular with corporate political donors, and will likely lead to attempts by powerful vested interests to limit its effects. In any event, judges deciding unconscionable conduct cases have previously referred to 'normal business practice' as a reason not to hold particular conduct unconscionable, so conduct left unchecked for too long may create its own legitimacy, to the detriment of consumers.

The use of guidance material as a substitute for stronger regulation has also been subject to criticism. Cortez (2014, p227) recently undertook a case study indicating guidance by regulators without follow-up regulation and enforcement may lead to a calcification into a 'weak default position'. The preservation of 'flexibility' as the

dominant factor in making decisions about regulation can lead to 'legal procrastination' (Super, 2011, p1382) and a 'regulatory inertia' (Cortez, 2014, p202) hard to break without a significant and public failure.

The negative effects of uncertainty are likely to be exacerbated by corporate secrecy and other forms of opacity. There is no incentive – rather the opposite – for service providers and marketers to disclose to consumers the full extent of data collected and used, or the nature of the cognitive biases or vulnerabilities they choose to attempt to exploit. Companies unsurprisingly favour vague, broad and generic privacy policies. However, even where more information is forthcoming, such as delivered in some social media sites' 'Why am I seeing this ad' functionality, empirical research has found this information to be 'incomplete', 'misleading', and 'vague' (Andreou, 2018). This is not surprising, as it is counterproductive for service providers to disclose to consumers when and how they use DCM techniques, as this is likely to reduce their effectiveness (Mik, 2016). The employment and job description of behavioural psychologists, and algorithm writers, is not something most suppliers will willingly reveal to consumers, as it may affect both the efficacy of the techniques and the reputation of the supplier. The very design of such techniques is intended to preclude self-discovery by consumers.

Without a working understanding of the data collected, the inferences drawn, and what companies know about the effects of behavioural advertising, there is every chance consumers will not actually realise what has actually happened to them, other than a case of buyer's remorse. They will ask themselves the question 'Why did I do something so irrational or so harmful?', without having any idea someone is to blame other than themselves. The recent publicity surrounding Cambridge Analytica's attempts to influence the outcome of the presidential election in the United States reveals a chilling example of this.

The lack of transparency inherent in DCM is just one example of the recent issues arising around the lack of market and algorithmic transparency. For example, Pasquale (2015) has sketched out other possible detrimental consequences of the growing collection of data by corporate actors, where use and abuse is screened from data subjects' view due to permitted corporate secrecy practices. Other scholars have delineated problems in state use of data and algorithms, for example in policing contexts (Bennett Moses & Chan, 2016). In Europe, legislators have recognised the need to address the problems lack of transparency can bring, such as inappropriate discrimination in decision-making by algorithms. Consequently, the European Union's new *General Data Protection Regulation* (GDPR), in force in May 2018, attempts to restrict some forms of automated individual decision-making, including a 'right to explanation' of algorithmic decisions (Art 22). Unfortunately, the efficacy of this attempt has already been doubted (Edwards & Veale, 2017).

As the use of data analytics increases, but transparency decreases, the likelihood of disbenefits for data subjects is likely to increase. I argue this type of lack of transparency falls under Bennett Moses' (2007) category of a 'new harm' type of legal problem. The new activities now made possible by the eObjects' attributes, particularly hyper-personalised profiling, and algorithmic microtargeting of marketing campaigns, may lead to an opacity unprecedented in the consumer space: a mass inability to know our own minds.

One fertile area for further research is to investigate solutions to these problems. This is beyond the scope of this paper, but I offer some preliminary observations. The adoption of an 'unfair conduct' prohibition, such as in the US (s 5(a), *Federal Trade Commission Act 1914*) and the EU (Art 5, *Unfair Commercial Practices Directive*), will only be effective if there are significant underlying principles providing content to this doctrine. The introduction of 'privacy by design' principles, such as contained in the GDPR (Art 25), is attractive to some extent because of the relative newness of the eObjects consumer industry. However, there is a massive amount of consumer data already 'in the wild' (eg see Christl, 2017), due to conventional ecommerce practices, and data collection by existing eObjects continues apace. Realistically, this data cannot be 'returned' to consumers: it has escaped for good. The effectiveness of disclosure and consent regimes for consumers is highly questionable (Ben-Shahar & Schneider, 2014): but schemes for disclosure to regulators (even if commercial-in-confidence) may be more fruitful in preventing harms, where there is a commitment and mechanisms for a swift legislative response. Specific regulation targeting inappropriate *conduct*, such as behavioural advertising, is urgently needed, in a form amenable to quick review and assessment to keep it up-to-date. The use of technology assessment panels or specialist agencies may assist in this objective (Bennett Moses, 2016).

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Digital Futures: places and people, technology and data

Digital constitutionalism
Mapping the constitutional response to digital technology's challenges

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Abstract: *In the existing scholarship, the denomination 'digital constitutionalism' has been used with different, sometimes conflicting meanings. The paper presents a literature review of this topic, and eventually proposes a new systematisation of the theoretical framework surrounding the concept of digital constitutionalism in order to reconcile the different positions of the scholarship. It is argued that digital constitutionalism represents a branch of the broader concept of constitutionalism. In particular, it does not identify the normative responses to the challenges of digital technology, but it is rather the set of principles and values that informs and guides them. Conversely, those normative responses can be regarded as parts of a process of constitutionalisation of the digital environment. In light of the adopted definitions, the paper eventually proposes a new way of mapping the normative responses emerged so far to address the challenges of digital technology. In particular, it not only includes the constitutional tools which we could define as 'classic' in the context of constitutional law, such as the binding legal texts produced in the state-centric dimension, but also new instruments, which are developed in the transnational dimension of private actors.*

Keywords: Digital constitutionalism, constitutionalisation, non-state actors, Internet bills of rights.

1. Introduction

In the existing scholarship, the denomination 'digital constitutionalism' has been used with different, sometimes conflicting meanings. This paper presents a literature review of this topic which highlights their commonalities and differences, and eventually proposes a new systematisation of the theoretical framework surrounding the concept of digital constitutionalism in order to attempt to reconcile the different positions of the scholarship.

Digital constitutionalism will be defined as the ideology which aims to establish and guarantee the existence of a normative framework for the protection of fundamental rights and the balancing of powers in the digital environment. It will be argued that digital constitutionalism represents a branch of the broader concept of constitutionalism. In particular, the former can be intellectually singled out from the latter to term the values and ideals that permeate, guide and inform the normative counteractions which are emerging to address the alterations of the constitutional ecosystem specifically engendered by the advent of digital technology.

Therefore, differently from what some scholars argue, it will be clarified that digital *constitutionalism* does not identify the normative responses to the challenges of digital technology, but it is rather the set of principles and values that informs those responses. Conversely, it will be argued that the latter can be regarded as parts of a process of *constitutionalisation* of the digital environment. Such a process will not be intended, as some scholars do, as encompassing only the final phase of institutionalisation or codification of norms. This paper will claim that a process of constitutionalisation starts even before, from the stage of elaboration of normative principles at societal level.

In this way, this paper will propose a new way of mapping the normative responses emerged so far to address the challenges of digital technology. In particular, it will include not only the constitutional tools analysed by the majority of the existing scholarship, which we could define as 'classic' in the context of constitutional law, such as the binding legal texts produced in the state-centric dimension, but also new instruments, which are developed in the transnational dimension of private actors.

This paper will be structured in the following way. The next section will present an analytical literature review of the scholars who studied the concept of digital constitutionalism. The following sections will propose a new systematisation of the theoretical framework related to the concept of digital constitutionalism. In particular, paragraph 3 will start with a reconstruction of the legal phenomena produced by the advent of digital technology in order to set the background of digital constitutionalism. Paragraph 4 will propose a new definition of digital constitutionalism, and will explain to what extent this new interpretation could reconcile the positions of the existing scholarship. Paragraph 5 will clarify the difference between digital constitutionalism and constitutionalisation of the digital environment, and will propose a new way of mapping the constitutional responses emerged to face the challenges of digital technology.

2. Existing literature

2.1 Fitzgerald

Fitzgerald recognises that, in the information society, the exercise of power is shared between public and private actors.[1] Therefore, he argues that the concept of constitutionalism, intended as the mediation or definition of power relations, does involve both public and private actors.

According to Fitzgerald, the nature of information society, which is international, intangible, non-territorial, and decentralised, requires a mixed governance structure combining private sector's self-regulation and public institutions' oversight. On the one hand, private actors exercise their power by regulating the code of software. On the other hand, public actors maintain an important role at governance level because they can still exercise a coercive power.

'Informational constitutionalism' or 'informational law' is the denomination adopted by Fitzgerald in order to denote the law of the state (in particular: intellectual property law, contract law, competition law, and privacy law) which should be called to delimit private actors' self-regulation.[2]

Fitzgerald's normative theorisation of governance mechanisms in the information society sees states' private law playing the central 'constitutional' role of limiting private actors' self-regulation. However, from a general perspective, one could point out two main issues that could affect in practice the operability of states' private law in carrying out this task. Firstly, sometimes it is difficult to

[1] Brian Fitzgerald, 'Software as discourse? A constitutionalism for information society' (1999) 24(3) *Alternative Law Journal* 144; Brian Fitzgerald, 'Software as discourse? The challenge for information law' (2000) 22(2) *European Intellectual Property Review* 47.
[2] Fitzgerald (2000).

subject private actors to one state's jurisdictions.[3] Secondly, being the activity of private actors in the information society transnational, there could be collisions with the private law of other states.[4]

2.2 Berman

Following Lessig,[5] Berman considers private actors' ability to define cyberspace's code as a powerful regulatory instrument.[6] In his paper he analyses whether those actors should be therefore subject to US constitutional law.[7] In the US, the state action doctrine limits constitutional adjudication to the conduct of public actors.[8]

Berman proposes a 'constitutive constitutionalism' as an alternative solution to bypass the state action doctrine and to eventually subject private actors to US constitutional law. According to Berman, constitutional adjudication should be extended to private actors instead of using ordinary law. In this way, courts could use the constitution as a touchstone for articulating constitutive values,[9] solving politically demanding questions,[10] and encouraging people to engage in these issues.[11]

Differently from Fitzgerald, who recognises the role of private law in limiting the power of private actors, Berman explicitly reject the idea that what he calls 'ordinary law' could perform such a constitutionalising function.[12] However, from this exclusion, one could move a main critique to Berman's position. As recognised by Fitzgerald, indeed, ordinary law could reflect or be permeated by constitutional values, and therefore one cannot exclude that it does not act as an important constitutional instrument in the sphere of private actors.

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[3] It suffices to think to the complex interpretative strategy adopted by the European Court Justice in *Google Spain v. AEPD* (C-131/12; ECLI:EU:C:2014:317) in order to attract Google within the scope of application of the European data protection directive.

[4] Cf. Andreas Fischer-Lescano, Gunther Teubner, 'Regime-collisions: the vain search of legal unity in the fragmentation of global law' (2004) 25 *Michigan Journal of International Law* 999.

[5] Lawrence Lessig, *Code and Other Laws of Cyberspace* (Basic Books 1999); see also Lawrence Lessig, *Code: Version 2.0*, 2nd ed. (Basic Books 2006).

[6] Paul Schiff Berman, 'Cyberspace and the State action debate: the cultural value of applying constitutional norms to "private" regulation' (2000) 71 *University of Colorado Law Review* 1263. Cf. Fitzgerald (2000).

[7] Berman quotes this evocative metaphor adopted by Lessig: "If code functions as law, then we are creating the most significant new jurisdiction since the Louisiana Purchase, yet we are building it just outside the Constitution's review. Indeed, we are building it just so that the Constitution will not govern-as if we want to be free of the constraints of value embedded by that tradition" at 1306.

[8] Cf. the German system, where fundamental rights can have a horizontal effect on private actors (so called *Drittwirkung*); see Vaios Karavas and Gunther Teubner**,** 'www.CompanyNameSucks.com: The Horizontal Effect of Fundamental Rights on 'Private Parties' within Autonomous Internet Law' (2005) 12(2) *Constellations* 262; Eric Engle, 'Third Party Effect of Fundamental Rights *(Drittwirkung)*' (2009) 5(2) *Hanse Law Review* 165.

[9] See, in particular, at 1293 ff.

[10] See, in particular, at 1296 ff.

[11] See, in particular, at 1298 ff; "Indeed, we are apt to use the language of rights in popular discourse even in situations where the dispute concerns only "private" entities. For example, employees often view restrictions on their freedom of expression or invasions of their privacy in the work- place"' as constitutional issues" at 1302.

[12] In particular, Berman contests the distinction between constitutional and ordinary law proposed by Richard Kay, according to whom: "[US Constitution's] attributes – including the Constitution's focus on the scope and shape of lawmaking power, its cumbersome amendment process, and its appeal to relatively permanent principles-make constitutional law unsuitable for ordinary law, which "tends to be more concerned with the resolution of day to day problems of social living"." at 1288. See Richard Kay, 'The State Action Doctrine, the Public-Private Distinction, and the Independence of Constitutional Law' (1993) 10 *Constitutional Commentary* 329.

2.3 Suzor

Drawing from Fitzgerald's theorisation, Suzor recognises the role of private actors' power in the regulation of virtual communities.[13] Referring both to Fitzgerald and Berman, he affirms that a constitutional perspective is useful in order to understand what the appropriate limits to the power of private actors should be. For this reason, he decides to employ the denomination 'digital constitutionalism' to denote the project which seeks to articulate a set of limits on private power, with particular attention to the context of virtual communities, topic on which he focuses his doctoral thesis.

In line with Fitzgerald, Suzor considers the contractual framework of virtual communities as their law, and, consequently, the limitations imposed on that framework by contract law as their constitutional principles.[14] Virtual communities' self-regulation is considered as legitimate, even if it is unilaterally established, because users provide their consent to it.[15] However, despite the presence of a valid consent from the users, such a law could infringe some external values imposed by the state.[16] For this reason, the contractual framework of virtual communities is subject to the limitations imposed by contract law.

Differently from Berman, Suzor excludes that the limitation of private power should be exercised by constitutional law. However, differently from Fitzgerald, Suzor argues that constitutional law plays a twofold role in the limitation of private power. Firstly, it can be used to determine the extent to which private actors' self-regulation is complying with the values established by the state. Secondly, it has the duty to inform and lead the development of contract law. In this way, constitutional principles, such as the rule of law,[17] could be transferred into the regulation of virtual communities via contract law.[18]

In a way similar to Fitzgerald, Suzor theorises the governance model of virtual communities as a mixture of public and private power. However, he underlines that such a model does not reflect a precise hierarchy between private self-regulation and state law, but he considers these two sources as melding together in a 'mesh' of public and private governance schemes.[19] According to Suzor, state law is loosing its centrality in contexts, such as virtual communities, dominated by the law of private actors. Conversely, private self-regulation is increasingly central, considered the rising relevance of virtual communities in the life of individuals. Nevertheless, Suzor argues that attempts to achieve a democratisation or a model of joint governance in virtual communities have essentially failed,[20] and that, for this reason, the limiting role that state law should play remains crucial.

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[13] Nicolas Suzor, 'Digital constitutionalism and the role of the rule of law in the governance of virtual communities' (2010) PhD Thesis, Queensland University of Technology, https://eprints.qut.edu.au/37636/.
[14] Ibid 121.
[15] Ibid 111.
[16] Ibid 113.
[17] Suzor explains what the role of the rule of law could be in the governance of virtual communities: "The rule of law consists of a number of different strands, none of which can be universally or directly applied to the governance of virtual communities, but each of which serve to highlight potential shortcomings in private governance. These include restraints on discretionary power, substantive limits based upon individual rights, formal limits on the creation and implementation of laws, procedural safeguards and due process, and an emphasis on consensual governance" at 21.
[18] Suzor refers to Dicey's doctrine on the role of private law in countries, like the United Kingdom, with an unwritten constitution: "This project follows somewhat from A V Dicey's argument that in the absence of a substantive written constitution, rule of law principles in the United Kingdom were protected by the evolution of private law doctrines that secured the substantive rights of citizens." at 53.
[19] Suzor explicitly refers to the model developed in Jeanne P. Mifsud Bonnici, *Self-regulation in cyberspace* (Asser Press 2008).
[20] Suzor refers to Jack Balkin, "Virtual Liberty: Freedom to Design and Freedom to Play in Virtual Worlds" (2004) 90 *Virginia Law Review* 2043. In particular, he mentions as an example of successful joint governance model Wikipedia, while as an example of failure Facebook's attempt to involve its users in the process of revision of its terms of use.

By recognising the constitutionalising role played by private law, and, at the same time, the guiding and informative function of constitutional law, Suzor somehow reconcile Fitzgerald's and Berman's positions. However, the critiques already reported in relation to Fitzgerald could still be advanced. By granting a role to state legislation, be it of constitutional or ordinary value, one unavoidably still attempts to subject the digital environment to states' jurisdictions, according to criteria developed for the physical world.

2.4 Gill, Redeker and Gasser (2015)

In 2015 Gill, Redeker and Gasser publish a working paper on 'digital constitutinalism'.[21] They propose to use this denomination as an umbrella term to connect a set of documents seeking to establish a bill of rights for the Internet. They argue that these texts, emerged in the last twenty-five years, are very different, but that they could be regarded as a part of a broader 'pre' or 'proto-constitutional discourse', as "intellectual building blocks for the constitutional material of the digital sphere" whose ultimate aim is to define comprehensive set of rights, principles, and governance norms for the Internet.[22] Moreover, such a constitutional discourse is not seen as static; the working paper highlights a progressive trend towards a crystallisation of principles into binding legal texts.[23]

Nevertheless, according to Gill, Redeker and Gasser, these Internet bills of rights are not constitutions in the classic sense, i.e. "mechanisms which delimit the boundaries of a state's power over its citizens".[24] Indeed, they do not have any foundational or primary position in the hierarchy of legal sources. However, they share the 'core substantive aspects' of constitutionalism, such as its values, problems and principles as well as its main functions of limiting state powers and empowering institutions within the society.[25]

Gill, Redeker and Gasser argue that their conception of digital constitutionalism is not so narrow as in Suzor, who referred to the limitation of power only within the context of virtual communities.[26] In reality, more than broader, their interpretation appears to be different. For them digital constitutionalism aims at the limitation of public power, while for Suzor at that of private power.[27] Moreover, the former identify such a limitative function in the documents of Internet bill of rights, while the latter recognises such a role to the private law of the state.

Main merit of the working paper authored by Gill, Redeker and Gasser certainly is to have conducted a first systematic and comprehensive empirical analysis on the emergence of the texts of Internet bills of rights, stimulating a new series of researches on this topic.[28]

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[21] Lex Gill, Dennis Redeker and Urs Gasser, 'Towards Digital Constitutionalism? Mapping Attempts to Craft an Internet Bill of Rights' (2015) Berkman Center Research Publication No. 2015-15, https://ssrn.com/abstract=2687120.
[22] Ibid 3.
[23] Ibid 2; cf. Francesca Musiani, Elena Pavan, Claudia Padovani who had already identified in a dataset of ten Internet bills of rights the elaboration of a series of elements which could have lead to the development of a more structured normative framework, in 'Investigating Evolving Discourses on Human Rights in the Digital Age: Emerging Norms and Policy Challenges' (2010) International Association for Media and Communication Research (IAMCR), Annual congress on Human Rights and Communication, Jul 2009, Mexico. https://hal-mines-paristech.archives-ouvertes.fr/hal-00448231.
[24] Ibid 2.
[25] Ibid 3.
[26] Ibid 12.
[27] Ibid 3; Gill, Redeker and Gasser also exclude from their dataset a series of texts whose site of formal recognition is not the state or the international governance community, but corporate policy because "[t]hese documents are concerned with the exercise and limits on private power in virtual communities and private social networks, in the spirit of what Nicolas Suzor has also called 'digital constitutionalism'" (ibid 12); see also Kinfe Micheal Yilma, 'Digital privacy and virtues of multilateral digital constitutionalism – preliminary thoughts' (2017) 25 *International Journal of Law and Information Technology* 115.
[28] See Kinfe Micheal Yilma, 'Digital privacy and virtues of multilateral digital constitutionalism – preliminary thoughts' (2017) 25 *International Journal of Law and Information Technology* 115; Special issue of the *International Communication Gazette* on digital constitutionalism (Spring 2018, forthcoming); Edoardo Celeste, 'Terms of Service and

However, taking into account the different positions adopted by Fitzgerald, Berman and Suzor, it is possible to advance two main critiques to the conception of digital constitutionalism presented in the working paper. Firstly, the restriction of the concept of digital constitutionalism to the limitation of *public* power – therefore excluding a role in limiting *private* power – does not seem to be justified. Secondly, one could question why the concept of digital constitutionalism should be restricted to the emergence of the Internet bills of rights, and not to extend to the role performed by private law and constitutional law in limiting private power, as in Fitzgerald, Berman and Suzor.

2.5 Redeker, Gill and Gasser (2018)

In 2018 Redeker, Gill and Gasser publish a re-elaboration of their work of 2015 in a special issue of the *International Communication Gazette* focusing on the topic of digital constitutionalism.[29] It includes some clarifications, and two main novelties.

Firstly, Redeker, Gill and Gasser confirm that their conception of digital constitutionalism is different from that developed by Suzor.[30] Moreover, they clarify that their theoretical framework can also be distinguished from that elaborated by Amoretti[31] and Teubner[32], respectively in relation to the concepts of electronic constitution and digital constitution. In particular, they argue that, even if Amoretti's and Teubner's theorisations could offer useful insights, the latter "remain either more focused on actual constitutions for the Internet or are less specifically informed by the transnational debate we explore in this article".[33]

In his book, Amoretti defines the electronic constitution as a 'technical knowhow' which represents a "constitutive aspect of history", and more precisely as "a mix of processes – material and ideal – that digital technologies put in play: policies, ideologies, economic interests and individual and social practice".[34] One can therefore understand why Redeker, Gill and Gasser's position, which is still anchored to the legal tradition, differs from that developed by Amoretti, who explicitly recognises that his notion of constitution overtakes the traditional legal conception.[35]

Teubner considers the digital constitution as the answer provided by constitutional law to three new challenges of modern society: namely, digitalisation, privatisation, and globalisation.[36] In particular, he argues that these challenges require to reconsider the idea of constitution, which is no longer anchored to the state dimension, but projected beyond the state. Teubner argues that such a transnational constitution is emerging through a series of 'civil constitutions', sets of constitutional norms developed by autonomous societal subsectors which are progressively institutionalised in positive law through a process of mutual influence.[37]

Redeker, Gill and Gasser do not specify which aspects of the Teubnerian theory are incompatible with their conception of digital constitutionalism. The author of this paper rather thinks that the two positions can be reconciled. In fact, as we will see later in this section, Redeker, Gill and Gasser, in

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Bills of Rights: New Mechanisms of Constitutionalisation in the Social Media Environment?' (2018, forthcoming) *International Review of Law, Computer and Technology*.

[29] Dennis Redeker, Lex Gill, Urs Gasser, 'Towards digital constitutionalism? Mapping attempts to craft an Internet Bill of Rights' (2018, forthcoming) *International Communication Gazette*, https://doi.org/10.1177/1748048518757121.

[30] Ibid.

[31] Francesco Amoretti, *Electronic Constitution: Social, Cultural, and Political Implications* (Information Science Reference 2009).

[32] Gunther Teubner, *Constitutional Fragments. Societal Constitutionalism and Globalization* (OUP 2012).

[33] Dennis Redeker, Lex Gill, Urs Gasser (2018, forthcoming).

[34] Amoretti (2009) 3.

[35] Ibid 3.

[36] See also Gunther Teubner, "Societal Constitutionalism; Alternatives to State-Centred Constitutional Theory?" in Christian Joerges, Inger-Johanne Sand, and Gunther Teubner (eds.), *Transnational Governance and Constitutionalism. International Studies in the Theory of Private Law* (Hart 2004) 3.

[37] Teubner (2012).

their re-elaboration of 2018, even decide to interpret the emergence of the texts of Internet bill of rights in light of the Teubnerian theory of societal constitutionalism.

Secondly, they overtake the unjustified restriction of the conception of digital constitutionalism referring only to the limitation of public power. They recognise that "[i]n today's political economy of the Internet, states and private corporations alike can either limit or contribute to the realization of perceived digital rights",[38] and that, consequently, digital constitutionalism could refer to the limitation of both public and private power. In reality, if one looks at the content of the article, it does not seem that this novelty has produced substantive changes. The first criterion adopted to select the documents of Internet bill of rights to be analysed still exclusively refers to the limitation of 'state power',[39] and the dataset still excludes those documents which do not identify the state dimension or the global governance community as their site of formal recognition.[40]

Thirdly, they embrace Teubner's theory of societal constitutionalism.[41] Teubner argues that constitutional norms can be produced also through a bottom-up process. Autonomous social groups elaborate norms, which are progressively institutionalised at legal level, through a mutual influence between state institutions and the social context. Redeker, Gill and Gasser argue that the emergence of documents of Internet bills of rights could be interpreted as the first phase of the process described by Teubner, and, therefore, as the juridification or institutionalisation at social level of new constitutional principles.[42] Moreover, they identify a progressive trend towards codification of these texts into binding legal documents, and they contend that this circumstance could be read as an evidence of the process of institutionalisation of the Internet bills of rights.[43] Finally, it is important to observe that Redeker, Gill and Gasser did not maintain in their work of 2018 the qualification of the phenomenon of the emergence of documents of Internet bills of rights as a pre- or proto-constitutional discourse.[44]

Undoubtedly, the expanded conception of digital constitutionalism encompassing both the limitation of public and private power reinforces Redeker, Gill and Gasser's analysis, and eliminates one of the main critiques advanced to their paper of 2015. However, the second critique presented above still persists.[45] The concept of digital constitutionalism seems to be still uniquely associated to the emergence of the Internet bills of rights, somehow implicitly excluding that it could be referred to the limitation of private power performed by private law, constitutional law, and by the principles developed by transnational organisations like ICANN.[46]

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[38] Redeker, Gill and Gasser (2018).

[39] Even if a few lines after, Redeker, Gill and Gasser write: "Governance norms and debates surrounding the limits of *state* and *corporate* power – including issues of participation, rule of law, democracy, stakeholder representation or political accountability – also help to form the substantive basis of digital constitutionalism" (emphasis added).

[40] Redeker, Gill and Gasser (2018).

[41] Gunther Teubner, "Societal Constitutionalism; Alternatives to State-Centred Constitutional Theory?" in Christian Joerges, Inger-Johanne Sand, and Gunther Teubner (eds.), *Transnational Governance and Constitutionalism. International Studies in the Theory of Private Law* (Hart 2004) 3.

[42] Redeker, Gill and Gasser (2018); see Christoph B. Graber, 'Bottom-Up Constitutionalism: The Case of Net Neutrality' (2017) i-call working paper no. 1-2017, https://www.rwi.uzh.ch/dam/jcr:1845662e-0650-440f-9a3f-fee197edef62/201701_i-call_WP_CBGraber_Bottom-UpConstitutionalism.pdf.

[43] They mention as example the adoption in Brazil of the so-called Marco Civil da Internet (Law no. 12.965, 23 April 2014); Redeker, Gill and Gasser (2018). See also Francis Augusto Medeiros, Lee A. Bygrave, 'Brazil's Marco Civil da Internet: Does it live up to the hype?' (2015) 31 *Computer Law and Security Review* 120.

[44] Redeker, Gill and Gasser do not explain the reasons of this choice. The author of this paper argues that embracing the Teubnerian theory of societal constitutionalism does not impose to renounce to the qualification of the phenomenon of the emergence of documents of Internet bills of rights as a pre- or proto-constitutional discourse. Conversely, the latter could even better describe the tendency towards a progressive codification highlighted by Redeker, Gill and Gasser in their paper.

[45] See *supra* para. 2.4.

[46] Redeker, Gill and Gasser in their paper of 2018 explicitly excludes to deal with these principles because their analysis "focus[es] on documents that aim at transforming Internet governance per se – even if limited by some documents' spatial

Thirdly, it is possible to criticise the reduction of the whole concept of 'juridification' to its specific meaning of institutionalisation of a document within the hierarchy of legal sources of a specific legal order. Redeker, Gill and Gasser affirm that the level of development of the documents of Internet bill of rights does not overtake the first or the second phase of the process of societal constitutionalisation described by Teubner.[47] This means that these texts either remain "embodiment of normative stances of civil society and other groups" or can become legally binding, nevertheless without any "preeminent status".[48] However, the concept of juridification not only encompasses the institutionalisation of a whole document, but also the institutionalisation of the norms and principles enshrined in such a document. In other words, one could argue that it is necessary to also look at whether and to what extent the norms and principles included in the Internet bills of rights have been institutionalised, and not only at whether the whole document has acquired a binding legal status. In fact, the interaction between national and transnational, institutional and societal dimensions could be metaphorically described an exchange of fluids between porous and permeable materials: the components of the material itself do not move, but it is the fluid to be alternatively absorbed by one and the other material.[49] In other words, sometimes it could happen that a document of Internet bill of rights does not become legally binding, but conversely its norms and principles are recognised in a higher source of the legal order.[50]

Finally, always in relation to the application of the Teubnerian theory of societal constitutionalism, one could question the correspondence of the documents of Internet bills of rights with the first phase of societal constitutionalisation described by Teubner. In particular, such a first phase presupposes that an agreement on a set of norms has been reached at societal level. However, it would be appropriate to investigate to what extent and in which contexts specific norms have assumed sufficiently determined contours at social level.[51] In fact, if one observes the number of Internet bills of rights emerged so far, one could argue that an agreement on the content of specific norms has not been reached yet. It is therefore opinion of the author of this paper that the process of emergence of documents of Internet bills of rights has not yet produced specific norms shared at social level, or, in other words, that the first phase of the process of constitutionalisation described by Teubner is still ongoing.

2.6 Interim conclusion

The existing literature does not offer a unitary picture of the concept of digital constitutionalism. In particular, there is no consensus on two fundamental characteristics of such a notion. Firstly, on the ultimate aim of digital constitutionalism: it is not clear whether it aims to limit the private power or also the public power. Secondly, there is no agreement on the instrument which should translate

focus, rather than a document defining the rules governing one particular organization, however great the importance of the organization for the governance of the Internet".

[47] See also for a clear explanation Christoph B. Graber, 'Bottom-Up Constitutionalism: The Case of Net Neutrality' (2017) i-call working paper no. 1-2017, https://www.rwi.uzh.ch/dam/jcr:1845662e-0650-440f-9a3f-fee197edef62/201701_i-call_WP_CBGraber_Bottom-UpConstitutionalism.pdf.

[48] Redeker, Gill and Gasser (2018).

[49] Cf. the concept of 'porous law' in Gunther Teubner, *Law as an Autopoietic System* (European University Institute Press 1993); see Graber (2017) who clearly explains with a series of examples the so-called process of double reflexivity of sociological system theory adopted by Teubner; cf. Andrea Simoncini, 'The Constitutional Dimension of the Internet. Some Research Paths' (2016) EUI Working Papers no. 2016/16; see Giovanna De Minico, 'Towards an Internet Bill of Rights' (2015) 37 *Loyola of Los Angeles International and Comparative Law Review* 1.

[50] It is worth reminding that for Teubner (2004) the civil constitutions are "neither mere legal texts nor are they the *de facto* structures of social systems" (16). In fact, he clarifies that "[e]lements of a civil constitution in the strict sense can be spoken of only once an interplay of autonomous social processes on the one side and autonomous legal processes on the other comes about. In systems theory language: if long-term structural linkages of sub-system specific structures and legal norms are set up." (16).

[51] Cf. Graber (2017), who adopts similar words to describe the institutionalisation at societal level of the principle of net neutrality.

digital constitutionalism: Fitzgerald entrusts this role to private law, Berman to constitutional law, Suzor on a private law informed by the principles of constitutional law, and finally Redeker, Gill and Gasser on the documents of Internet bill of rights.

On the one hand, the existing literature does not show doubts in relation to the notions of 'constitution' and 'constitutional law' – in fact, all the analysed authors refer to their traditional meanings proper to the state dimension.[52] On the other hand, the notions of 'constitutionalism' and 'constitutionalisation' appear to be surrounded by a certain nebulosity, especially because these concepts are generally referred to transnational contexts, such as that of private actors, in Fitzgerald and Suzor, or of civil society, in Redeker, Gill and Gasser.[53]

Therefore, this paper aims to build on the analysis so far conducted by the existing literature in order to clarify some uncertain points related to the concepts of digital constitutionalism and constitutionalisation of the digital environment. The next section will start illustrating which legal phenomena are at the basis of digital constitutionalism.

3. The origin of digital constitutionalism

3.1 Digital technology affects the constitutional ecosystem

In this section, I describe the legal phenomena which represent the the background of digital constitutionalism. I argue that, over the last years, digital technology has affected the relative equilibrium of the constitutional ecosystem. I define constitutional equilibrium as the ideal condition produced by the application of the norms of constitutional law in a given legal order. Such a condition essentially involves two aspects, which reflect the basic functions of constitutional law: 1) the protection of fundamental rights, and 2) the balancing of powers.[54]

This section does not aim to focus on a specific legal order, but rather to show, from a general perspective, that the constitutional ecosystem is not immune to digital technology. I argue that the advent of digital technology generates in the constitutional ecosystem the following alterations:

a) it amplifies the possibilities of individuals to exercise their fundamental rights. Digital technology expands the possibility to transmit information. From a constitutional point of view, this circumstance implies that all the series of fundamental rights based on the exchange of information, such as freedom of expression, religious freedom, freedom of assembly, freedom to conduct a business are enhanced.

b) Digital technology amplifies the risk of threats to fundamental rights. The same increased possibility to exchange information just praised as a means to enable the exercise of fundamental rights can become a source of threats. Defamation, hate speech, cyberbullying, child pornography are some examples of how freedom of expression can be illegally used through digital instruments. Moreover, digital technology not only enhances the possibility to transmit information, but it also allows 1) to block or limit such transmission, 2) to monitor the content of the transmitted information, and 3) to register other information related to the individuals involved in the transmission. In the first case, a limitation of the transmission of information could violate all the rights which on that transmission are based, such as freedom of expression, information, association, etc. In the second case, the transmitted information could be confidential and could include personal data; therefore, an unauthorised access to such contents could violate all the rights aiming to protect the personal sphere

[52] It is clear, for example, that in Redeker, Gill and Gasser (2018) the Internet bills of rights are not constitutions; see also Claudia Padovani and Mauro Santaniello in their editorial to the special issue of the *International Communication Gazette* on digital constitutionalism.

[53] Redeker, Gill and Gasser only refer, but not analyse in depth the concept of 'constitutionalisation'. To this purpose, they only write: "The purpose of this article is to conduct a mapping of the landscape and to arrive at a collection of documents from which we can gain preliminary insights about the potential constitutionalization of cyberspace."

[54] Anne Peters, 'Compensatory Constitutionalism: The Function and Potential of Fundamental International Norms and Structures' (2006) 19 *Leiden Journal of International Law* 579.

of the individual, such as the right to privacy, right to respect of private life, secrecy of correspondence, right to data protection, as differently articulated in the various legal systems. In the third case, other information concerning the transmission of information could represent personal data, and, therefore, an illegitimate use of such data could infringe the rights aiming to ensure their protection.

c) Digital technology affects the balancing of powers in the constitutional ecosystem. If one thinks to power in a general sense, as the ability of a constitutional actor to direct the behaviour of another actor, it is possible to observe that private corporations producing, selling and managing digital technology products and services worldwide are emerging in the constitutional scenario as a new dominant actor beside nation-states.[55] In fact, these corporations detain the power to regulate the use of digital technology instruments by individuals. In this way, they can interfere with the exercise of fundamental rights of the individuals who use these instruments. Certainly, violations of fundamental rights perpetrated by private actors are not a novelty generated by the advent of digital technology.[56] However, the massive diffusion of digital technology instruments among the individuals, combined with the dominant role that private corporations play in the digital environment, increases the likelihood of rights violations perpetrated by non-state actors. This circumstance subverts the setting of the existing mechanisms of power balancing, which rather focus on the relationship between individuals and nation-states.

3.2 The emergence of normative counteractions

The alterations of the relative equilibrium of the constitutional ecosystem generate a series of normative counteractions. Those counteractions consist in the integration or in the amendment of the existing normative framework in order to re-establish a condition of relative equilibrium in the constitutional ecosystem. They present different aims and show different modalities. I propose to categorise them according to the kind of alteration they aim to address:

a) norms aiming to recognise the amplification of the possibility to exercise an existing fundamental right. Over the past years, digital technology has been an extraordinary enabler of fundamental rights. The use of digital technology instruments has become an integral part of the architecture of contemporary society, so that it can now be deemed as a necessary precondition to exercise a series of rights. Therefore, as an example of this first category of norms, one can mention those recognising a right to Internet access as a necessary condition to exercise a whole series of existing rights, ranging from freedom of expression to freedom to conduct a business.[57]

b) norms aiming to limit the increase of fundamental rights violation. An apparent example of the emergence of these norms is represented by the development of data protection law. From the '60s, the advent of computing technology allowed for the first time the creation of big databases and increased the possibility to easily transfer the data stored on them. Such a new development presented a series of potential risks for the security of the stored data, especially if they represented information related to individuals. This circumstance led to the emergence of what we now call data protection law.[58]

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[55] See Teubner (2004) and (2012); Stefano Rodotà, 'Una costituzione per Internet?' (2010) 3 *Politica del diritto* 337.
[56] See, ex multis, Andrew Clapham, *Human Rights Obligations of Non-State Actors* (OUP 2006).
[57] See, e.g. Conseil constitutionnel (France), decision n° 2009-580 DC du 10 juin 2009, para. 12, http://www.conseil-constitutionnel.fr/conseil-constitutionnel/root/bank/download/cc-2009580dc.pdf; Sala Constitucional de la Corte Suprema de Justicia (Costa Rica), sentencia n° 12790 de 30 de Julio de 2010, https://www.poder-judicial.go.cr/salaconstitucional/index.php/servicios-publicos/759-10-012790; ECtHR, *Cengiz and Others v. Turkey* [2015] (Applications nos. 48226/10 and 14027/11), para. 49; Law no. 12.965/2014 (Brazil), so-called 'Marco Civil da Internet', Articles 4 and 7.
[58] Peter Blume, 'Data Protection and Privacy – Basic Concept in a Changing World' (2010) 56 *Scandinavian Studies in Law* 151.

c) norms aiming to re-establish a balance among existing powers. As an example of these norms, it is possible to mention those requiring public institutions to publish selected information on their website, or those establishing a right to access documents held by public institutions through digital technology instruments.[59] In fact, both these kinds of norms aim to introduce new forms of citizens' control on the power of public institutions. They represent a declination of the general right to information. This right emerged well before the advent of digital technology;[60] nevertheless, it is possible to contend that the advent of digital technology undoubtedly provided a boost for the implementation of the principle of freedom of information. Indeed, these new technologies have offered for the first time the technical possibility to instantaneously give access to an unprecedented amount of governmental information at lower costs. With the advent of digital technology the concept of 'democracy in public' proposed by the Italian philosopher Norberto Bobbio has eventually found the technical instruments to be substantiated.[61]

3.3 A normative imperative as corollary of digital constitutionalism

In this paper I argue that the emergence of the normative counteractions presented above is imposed by a normative imperative. In a similar way to Newton's Third Law of Motion, an alteration of the constitutional ecosystem should necessarily be followed by an attempt to re-establish a state of relative equilibrium.

I contend that such an imperative is a corollary of modern constitutionalism, which, through constitutional law, always seeks to ensure the protection of fundamental rights and the balancing of power in a given legal order.[62] More accurately, we could affirm that such a normative imperative stems from a narrower 'branch' of modern constitutionalism. In fact, the emergence of a set of normative counteractions focusing on the digital environment allows us to single out a specific form of constitutionalism proper to this context, which we could term 'digital constitutionalism'.

4. Digital constitutionalism

4.1 A (sub)ideology

As illustrated in the previous paragraph, I consider digital constitutionalism as a vulgarisation or a declination of modern constitutionalism. The former shares the foundational values, the overall aims of the latter, but it focuses on the specific context affected by the advent of digital technology. Being digital constitutionalism an ism, we could define it as an *ideology* – or a sub-ideology, if we intend it as a specific component of the broader modern constitutionalism, which aims to establish and to

[59] See, e.g. Article L311-1 of the Code des relations entre le public et l'administration, as modified by article 3 of the Loi n° 2016-1321 du 7 octobre 2016 pour une République numérique (France); Article 2 of the Legislative Decree no. 33/2013 (Italy); articles 6, 10, 11, and 12 of Regulation (EC) 1049/2011 (EU).

[60] The first law on freedom of information is the 'Gracious Ordinance Regarding the Freedom of Writing and of the Press' enacted in 1766 by the Swedish King Adolphus Frederick, while the U.S. Freedom of Information Act 1966 is the first modern example of statute allowing access to governmental documents. See Juha Mustonen (ed), *The World's First Freedom of Information Act – Andres Chydenius' Legacy Today*' (2006) Anders Chydenius Foundation, http://www.chydenius.net/pdf/worlds_first_foia.pdf; Herbert N. Foerstel, *Freedom of Infromation and the Right to Know – The Origins and Applications of the Freedom of Information Act* (Greenwood Press 1999).

[61] Norberto Bobbio, Richard Bellamy (ed) and Roger Griffin (tr), *The Future of Democracy* (Minneapolis: University of Minnesota Press 1991).

[62] See Jeremy Waldron, 'Constitutionalism: A Skeptical View' (2010) Scholarship @ GEORGETOWN LAW, http://scholarship.law.georgetown.edu/hartlecture/4; see András Sajó, Limiting Government: An Introduction to Constitutionalism (Central European University Press 1999); cf. J. H. H. Weiler and Marlene Wind (eds.) *European Constitutionalism Beyond the State* (Cambridge University Press 2003); see Karolina Milewicz, 'Emerging Patterns of Global Constitutionalisation: Towards a Conceptual Framework' (2009) 16(2) *Indiana Journal of Global Legal Studies* 413; see Antje Wiener, 'Editorial: Evolving Norms of Constitutionalism' (2003) 9(1) *European Law Journal* 1.

ensure the existence of a normative framework for the protection of fundamental rights and the balancing of powers in the digital environment.

The term 'ideology' is often used in a pejorative sense, following Marx's concept of ideology as 'false consciousness', i.e. as "a set of beliefs with which people deceive themselves",[63] or like in politics, as a non-practical attitude.[64] In this paper, this denomination is used in a neutral way, as a structured set of values and ideals.

The advantage of thinking of digital constitutionalism as an ideology, and, therefore, as a purely theoretical concept, lies in the possibility to distinguish it from its implementation, its translation into reality. For example, the concept of digital constitutionalism, as some scholars have argued, does not correspond to the documents of Internet bill of rights,[65] but, as correctly specified by Redeker, Gill and Gasser, it is "a common term to connect a constellation of initiatives". Therefore, digital constitutionalism *connects*, but it *is not* the constellation of initiatives analysed by Redeker, Gill and Gasser. Digital constitutionalism is the ideology which permeates, guides, informs the emergence of the Internet bills of rights – but not only of these documents, as I will illustrate in paragraph 5.

4.2 Limitation of public and private power

The literature review performed in the second section of this paper showed that there is no consensus among the analysed scholars on the aim of digital constitutionalism. Fitzgerald, Berman and Suzor intended constitutionalism as the limitation of private power.[66] Redeker, Gill and Gasser, in the first version of their paper (2015), opposed a conception of digital constitutionalism as the limitation of public power, therefore maintaining a vision anchored to the traditional notion of constitution relating to the state dimension. Subsequently, this restriction was overtaken in the second version of their paper (2018), where they affirmed that "[e]fforts toward digital constitutionalism may aim to limit the power of both public authorities and private corporations".[67]

As recognised by Redeker, Gill and Gasser in the last version of their paper (2018), I argue that there is no reason to restrict the concept of digital constitutionalism to the limitation of either public or private power. A *digital* constitutionalism, indeed, is a concept which refers to a specific context, the digital environment, where private actors emerge beside nation states as potential infringers of fundamental rights. Such a peculiarity of the digital environment requires to dis-anchor the concept of constitutionalism from the state dimension in order to fully appreciate the emergence of the powers of private actors.

This interpretation is the result of a process of generalisation and subsequent re-specification of the concept of constitutionalism in relation to the digital environment.[68] The intellectual exercise of generalisation allows us to abstract the notion of constitutionalisation from the specific context in which it emerged – the state dimension – by identifying its quintessential functions, which, according to this paper, are the protection of fundamental rights and the balancing of existing powers.

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[63] Maurice Cranston, 'Ideology' in *Encyclopaedia Britannica* (2014) https://www.britannica.com/topic/ideology-society/Introduction.

[64] Maurice Cranston, 'Ideology' in *Encyclopaedia Britannica* (2014) https://www.britannica.com/topic/ideology-society/Introduction.

[65] As a series of scholars seem to suggest; see Padovani and Santaniello (2018); Yilma (2017); Monique Mann, Angela Daly, Michael Wilson, Nicolas Suzor, 'The limits of (digital) constitutionalism: Exploring the privacy-security (im)balance in Australia' (2018, forthcoming) *International Communication Gazette*.

[66] Admittedly, their papers focus on private actors. Therefore, one could argue that these authors do not exclude that the concept of digital constitutionalism may be referred to the limitation of public actors. Evidence of that is the fact that Fitzegerald, Berman and Suzor are well conscious that they are adapting a concept, such as constitutionalism, traditionally associated with the context of public power, to the limitation of private power.

[67] Redeker, Gill and Gasser (2018).

[68] See Teubner (2004).

Subsequently, the exercise of re-specification allows us to re-contextualise these two function in the digital environment. In this way, it is apparent that, in a context where both public and private actors can affect the protection of fundamental rights, the aim of digital constitutionalism does involve the limitation of the power of both these categories of actors.

A similar conception of digital constitutionalism frees itself from the ties anchoring it to the state dimension, in which the broader notion of constitutionalism emerged. As we will see in the next section, this interpretation of digital constitutionalism also implies to reconsider the kinds of normative counteractions that emerge in order to implement its values and principles. It will be possible to identify not only traditional normative answers belonging the hierarchy of sources of the state-centric dimension, but also innovative instruments emerging in the transnational context.

5. The process of constitutionalisation

5.1 Constitutionalism v constitutionalisation

This paper proposes to adopt the expression 'constitutionalisation of the digital environment' to identify the *process* of production of norms aiming to ensure the protection of fundamental rights and the balancing of powers within that context. In particular, I argue that, in this specific historical moment, such a process aims to produce a series of normative counteractions to address the alterations of the constitutional ecosystem generated by the advent of digital technology. In light of this definition, it is important to make a series of clarifications.

Firstly, it is necessary to understand the relationship between constitutionalisation of the digital environment and digital constitutionalism. The latter represents the set of values and ideals that permeate, inform, guide the process of constitutionalisation of the digital environment. Digital constitutionalism provides the imperative at the basis of the process of constitutionalisation as one of its corollary, generating, in this way, the production of normative counteractions to address the challenges of digital technology.

Secondly, it is important to emphasise that constitutionalisation is a *process* composed of different stages. I do not use this term to refer only to the final stage(s) at the end of such a process in which norms are institutionalised or constitutionalised. It is worth highlighting this aspect because, differently from part of the existing scholarship,[69] I argue that the mere elaboration of constitutional principles at societal level can mark the presence of a process of constitutionalisation in the digital environment, even if norms are not yet institutionalised or positivised in the hierarchy of legal sources. Consequently, I affirm that the digital environment is experiencing a real 'constitutional moment'.[70]

Lastly, the process of constitutionalisation of the digital environment is not unitary. Even if from a conceptual point of view it is possible to identify common foundational values, motivations, and aims, the process of constitutionalisation does not adopt a single modality, but it is translated into different

[69] Padovani and Santaniello (2018), for instance, exclude that the emergence of documents of Internet bills of rights could be the evidence of an ongoing process of constitutionalisation. However, in line with the other contributors to the special issue of the *International Communication Gazette*, they argue that the appearance of these texts is a necessary – but not sufficient – precondition for a process of constitutionalisation of the Internet. Conversely, in this paper I contend that a process of constitutionalisation starts with the theorisation of constitutional principles, and cannot be reduced to the final institutionalisation and positivisation of the latter.

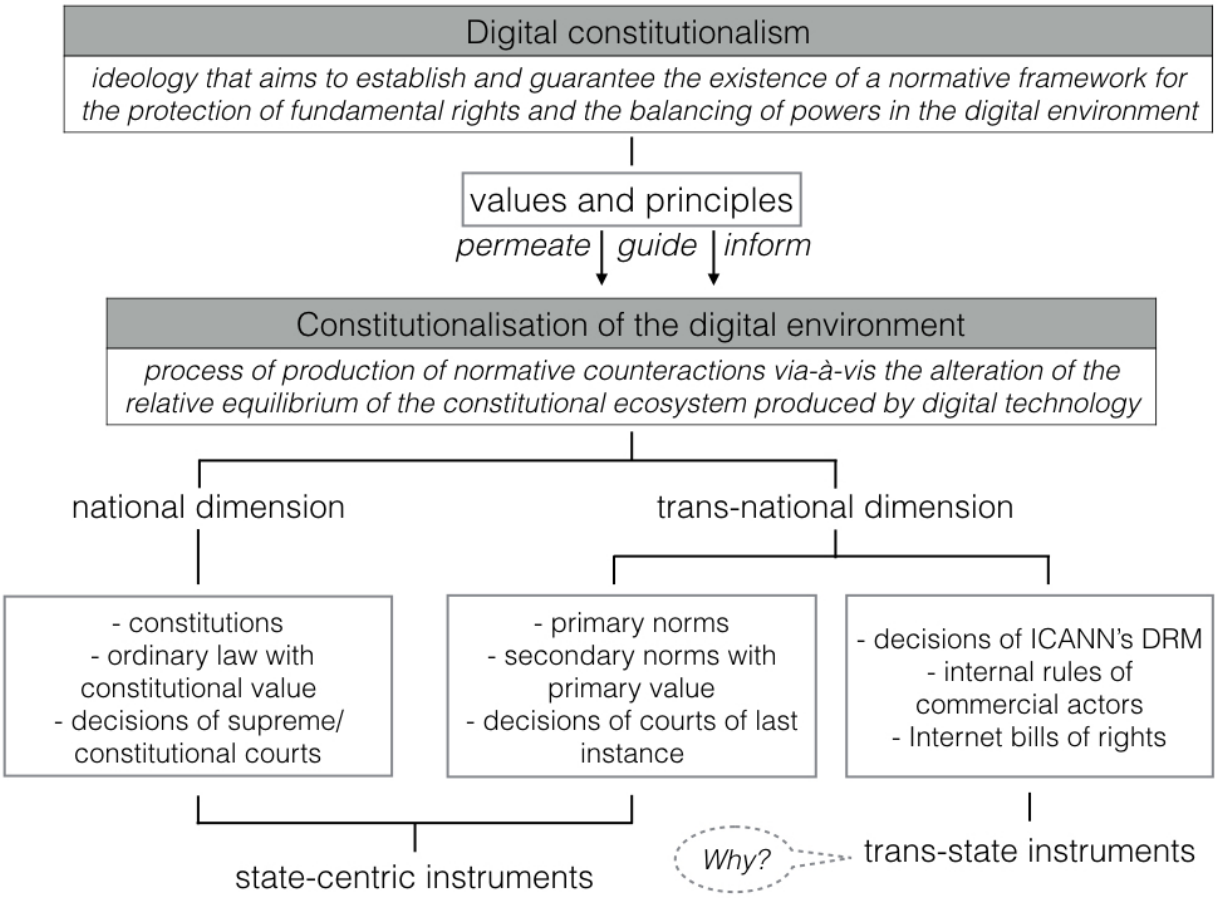
[70] Cf. Viktor Mayer-Schönberger, and John Crowley, "Napster's second life?: The regulatory challenges of virtual world" (2006) 100(4) *Northwestern University Law Review* 1775; Andreas Fischer-Lescano, 'Redefining Sovereignty via International Constitutional Moments?' in Michael Bothe, Mary Hellen O'Connel, and Natalino Ronzitti, *Redefining Sovereignty: The Use of Force after the Cold War* (Brill-Nijhoff 2005); Anne-Marie Slaughter, and William Burke-White, 'The International Constitutional Moment' (2002) 43(1) *Harvard International Law Journal* 1.

normative answers, which sometimes are stratified, or even overlapping. The next section will propose a mapping of these different kinds of modalities.

5.2 Mapping constitutional responses

I propose the scheme below to better visualise the different categories of constitutional responses so far emerged, which could be regarded as parts of the process of constitutionalisation of the digital environment. In particular, rather than focusing on the substantive content of these normative counteractions, we will look at their source, i.e. at the dimension in which or at the actors that produce them, and at the normative instruments they adopt.

The following part of this section will then illustrate each category and propose a series of examples. Nevertheless, it is important to stress that this paper does not aim to provide an exhaustive directory of all the constitutional responses emerged so far. Its objective is rather to show that the proposed definition of the process of constitutionalisation of the digital environment can encompass all the constitutional instruments analysed by the existing scholarship, and, in this way, reconcile their positions.



5.2.1 National dimension

Firstly, it is possible to identify a category of normative counteractions developed at *national* level, which we could define as 'classic' in the constitutional context. They integrate or modify the legal framework through legally binding texts belonging to the hierarchy of legal sources, such as

constitutions and other texts with primary value,[71] ordinary law with constitutional value[72] as well as decisions of supreme/constitutional courts[73]. In this category, we find the instruments taken into consideration by Fitzgerald (ordinary law), Berman (constitution, decisions of constitutional courts), and Suzor (constitution, ordinary law).

5.2.2 Regional and international organisations

Secondly, another 'classic' category of normative counteractions is that represented by norms developed at *transnational* level within the framework of regional or international governmental organisations. Also in this case, these counteractions integrate or modify the legal framework through legally binding instruments which correspond, in the respective regional or international organisations, to primary norms,[74] secondary norms with primary value,[75] and decisions of courts of last instance.[76]

5.2.3 Non state-centric dimension

Interestingly, it is possible to identify a third category of normative counteractions. They still emerge at *transnational* level, but this time not in a *state-centric* dimension, i.e. in a dimension in which nation-states represent the basic unit. Consequently, they do not take the form of the binding legal instruments observed in the first two categories.

a) Internet bills of rights

Within this group we can undoubtedly mention the instruments analysed by Redeker, Gill and Gasser. In fact, in the documents of Internet bill of rights it is possible to identify all the categories of norms identified in the third section of this paper as potential expression of normative counteractions to the alteration of the constitutional ecosystem produced by the advent of digital technology. Namely: norms aiming to recognise the enhanced possibility of individuals to exercise their fundamental rights;[77] norms aiming to limit potential violations of fundamental rights;[78] and norms aiming to achieve a balance of the existing powers.[79]

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[71] See, as an example of norm aiming to recognise an amplification of the possibility to exercise existing fundamental rights, the right to participate in the Information society enshrined in 2001 in Article 5A of the Greek constitution, http://www.hellenicparliament.gr/UserFiles/f3c70a23-7696-49db-9148-f24dce6a27c8/001-156%20aggliko.pdf.

[72] See, as an example of norm aiming to recognise an amplification of the possibility to exercise existing fundamental rights, the right to Internet access in Articles 4 and 7 of the Brazilian Law no. 12.965/2014 (Marco Civil da Internet), https://www.publicknowledge.org/assets/uploads/documents/APPROVED-MARCO-CIVIL-MAY-2014.pdf.

[73] See, as an example of norm aiming to recognise an amplification of the possibility to exercise existing fundamental rights, the decision of the French Conseil constitutionnel no. 2009-580 DC of 10th June 2009, at 12, http://www.conseil-constitutionnel.fr/conseil-constitutionnel/root/bank/download/cc-2009580dc.pdf.

[74] See, as an example of norm aiming to recognise an amplification of the possibility to exercise existing fundamental rights, the right of persons with disabilities to access to ICT in Article 9(1) of the UN Convention on the Rights of Persons with Disabilities adopted in 2006, https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-9-accessibility.html.

[75] See, as an example of norm aiming to limit potential violation of existing fundamental rights, the introduction in the EU of new data protection principles by Regulation (EU) 2016/679 (General Data Protection Regulation).

[76] See, as an example of norm aiming to recognise an amplification of the possibility to exercise existing fundamental rights, the recognition by the European Court of Human Rights of the crucial role that Internet plays as one the principal means to exercise the right to freedom of expression, in ECtHR, *Cengiz and Others v. Turkey* [2015] (Applications nos. 48226/10 and 14027/11), para. 49.

[77] See, e.g., Principles 3 and 8 of "The 10 Internet Rights & Principles", http://internetrightsandprinciples.org/site/wp-content/uploads/2018/01/IRPC_english_5thedition.pdf.

[78] See, e.g., Principle 5 of "The 10 Internet Rights & Principles".

[79] See, e.g., Principle 10 of "The 10 Internet Rights & Principles".

b) Decisions of ICANN's dispute resolution mechanisms

In the version of their paper of 2018, Redeker, Gill and Gasser explicitly exclude from their analysis the decisions of dispute resolution mechanisms of transnational organisations related to the digital environment, like ICANN.[80] In particular, they argue that these instruments do not aim to transform Internet governance, but their objective is rather to define the rules of a particular organisation. Nevertheless, I think that this qualification does not prevent us to consider the norms developed within this specific organisation as a kind of constitutional counteraction. In fact, as rightly observed by Teubner and Karavas, the arbitrators of ICANN's dispute resolution mechanisms have developed a series of new rules, especially recognising the principle of freedom of expression in the context of disputes related to domain names, which are not directly taken from any state-centric constitutional document.[81]

c) Internal rules of commercial actors

Lastly, in this paper I contend that it is possible to consider as a normative counteraction the emergence of specific norms in the internal rules of commercial actors operating in the digital environment, such as terms of use, terms of service, and binding corporate rules.[82] For example, in relation to social media's terms of service, Suzor recognises that these instruments regulate the distribution of power as constitutional documents, even if, from a formal point of view, they are merely contract between private parties.[83] In fact, if we follow the categorisation of normative counteractions proposed in the third section of this paper, we can identify in this category of texts: norms which recognise the amplification of the possibility to exercise a fundamental right, for example establishing a right to access digital platforms without discriminations;[84] norms aiming to limit potential violation of fundamental rights, such as those specifying the extent to which users' personal data should be protected;[85] norms which attempt to balance the existing powers, for example requiring digital platforms to act in a transparent way[86] or allowing users to participate in the process of amendment of terms of service.[87]

6. Conclusion

The literature review conducted in this paper has shown that the denomination 'digital constitutionalism' has been used with different, sometimes conflicting meanings. This paper has therefore proposed a new definition. It has been argued that this concept identifies the branch of modern constitutionalism which seeks to establish and ensure the existence of a normative framework for the protection of fundamental rights and the balance of powers in the digital environment.

In light of this definition, it has been contended that digital constitutionalism does not exclusively aim to limit the power of either public or private actors, as part of the scholarship affirmed, but both of them. In fact, in the digital environment, private actors emerge beside nation-states as potential

[80] See, *supra*, note 46.
[81] Karavas and Teubner (2005); see also Teubner (2004).
[82] See Celeste (2018, forthcoming).
[83] Nicolas Suzor, "The responsibilities of platforms: A new constitutionalism to promote the legitimacy of decentralized governance", Association of Internet Researchers Annual Conference, 5-8 October 2016, Berlin, http://eprints.qut.edu.au/101953/.
[84] See, e.g., Facebook's Principles no. 1, 3, 4, 5, 6, 7, and 10, https://www.facebook.com/principles.php.
[85] See, e.g., Facebook's Principles no. 2.
[86] See, e.g., Facebook's Principles no. 9.
[87] See, e.g., Facebook's Principles no. 9. Historically, Facebook went even further: in 2009 the company of Menlo Park announced for the first time to give its users the opportunity not only to comment, but even to vote the set of terms they preferred. See Jonathan Zittrain, "A Bill of Rights for the Facebook Nation", *The Chronicle of Higher Education*, 20 April 2009, https://www.chronicle.com/blogs/wiredcampus/jonathan-zittrain-a-bill-of-rights-for-the-facebook-nation/4635.

infringers of fundamental rights. Such a peculiarity demands to broaden the original concept of constitutionalism in order to appreciate also the existence of the power of private actors.

Moreover, it has been clarified that the denomination 'digital constitutionalism' should not be used to term the concrete instruments which substantiate its values and ideals, as some scholars do. Digital constitutionalism is rather the set of values and ideals that permeate, guide, inform this series of instruments. In particular, it has been argued that the advent of digital technology has affected the relative equilibrium of the constitutional ecosystem, and that, in light of this situation, the ideals of constitutionalism impose the emergence of a series of normative counteractions.

The expression 'constitutionalisation of the digital environment' has been proposed to denote the current process of emergence of these counteractions. It has been argued that, such a process, differently from what some scholars affirm, starts from the phase of elaboration of new constitutional principles, and does not involve only their formal institutionalisation or codification. For this reason, this paper claims that the digital environment is currently living a constitutional moment.

Finally, it has been observed that there are different kinds of normative counteractions emerged to face the challenges of digital technology. Therefore, the process of constitutionalisation of the digital environment is not unitary, but involves different categories of instruments and actors. In particular, the mapping exercise conducted in this paper has shown that it is possible to identify as part of this process not only all the instruments analysed by the existing scholarship, such as ordinary law, constitutional law, and the Internet bills of rights, but also other kinds of normative responses, such as those developed at regional and international level, in the dispute resolution mechanisms of transnational organisations like ICANN, and as internal rules of commercial actors.

Therefore, in light of this mapping, it is possible to notice that constitutional responses to the alterations produced by the advent of digital technology not only emerge in contexts that we could define as 'classic' in constitutional law, such as in the national, regional and international dimensions in which the nation-state still represents the central player, but also in new contexts which are rather dominated by private actors.

For this reason, I propose as future research pathway to analyse and compare the different forms through which the process of constitutionalisation of the digital environment takes place. In particular, I believe that a special attention should be devoted to the reasons why constitutional responses are emerging in non-traditional contexts outside the state-centric dimension.[88]

[88] In Celeste (2018, forthcoming), in relation to the social media environment, I have already started to reflect on the reasons why constitutional responses are emerging in non-traditional contexts outside the state. I argue that this phenomenon could be explained as a form of 'compensatory constitutionalisation'. In this way, I develop a conception initially proposed by Anne Peters (2006), arguing that the normative responses emerged in non-traditional contexts aim to compensate a series of points of failure of traditional state-centric constitutional instruments.

Jury Verdicts
A Computer Generated Analysis

D Lorimer March 2018

Foreword: Law Education and Computational Science

This paper describes how aspects of the law can be analysed by an alternative methodology, namely quantitative analysis. Some of the great European philosophers, such as Descartes[1] and Kant[2], whose Enlightenment ideas underpin western liberal democracy and influence its legal foundations, were also mathematicians. Something often elided in undergraduate law courses. The advent of computer technology allows seemingly complex algebraic expressions, such as those used in conditional probability calculations, to be simplified and handled in a numerically iterative and visual way, thus making such algebraic applications more accessible, through *Excel* in particular, to anyone with a basic understanding of the software. Readers, who may be tempted at this point to disregard or doubt any text containing a mathematical reference or equation, please read on, this is first and foremost a legal text. There are no equations.

The Computer Generated Results ('CGR') section (page 29) depicts an example of just such a computer application. A simple decision tree analysis is used to graphically describe how a jury with only four jurors can generate up to 16 voting configurations. This defines a simple algorithm which a computer can then use iteratively to generate results for the Scottish 15 juror system, rendering probabilities of a guilty or innocent verdict for over 32 thousand voting configurations. The results are presented graphically using Cartesian co-ordinates (for which we can thank Descartes and a fly

[1] Perhaps most well-known for the philosophical observation 'Cogito, ergo sum' ('I think, therefore I am') in his 1637 'Discourse on Method': Cogito, ergo sum < https://www.britannica.com/topic/cogito-ergo-sum > accessed 15 March 18.

[2] For some interesting parallels between the philosophy of Kant and the poetry of Robert Burns, see David Lorimer, 'Presenting as an Integral Part of Research' < https://www.abdn.ac.uk/law/blog/presenting-as-an-integral-part-of-research/ > accessed 15 March 18.

on his ceiling[3]), thereby allowing immediate visual and theoretical comparison to similarly generated outcomes for the 12 juror system found in other jurisdictions.

A more contemporary body of legal philosophers, the American Legal Realists[4] had more to say on the subject of judges and their decision making in the courtroom. Their combined analysis of the psychology and group dynamics of the 15 persons making up a Scottish jury (a scrum of lay-judges?), whose aggregate verdict is predicated on a simple majority, would be very interesting indeed. That was clearly not their collective focus however. Perhaps the computer graphics based work presented here (originally generated for the American Summer School held at Aberdeen University in 2017) approximates at least some flavour of what they may have opined on the Scottish jury, in promoting the advice, as it does, of one of their leading proponents:

'While lawyers would do well, to be sure, to learn scientific logic from the expositors of scientific method, it is far more important that they catch *the spirit of the creative scientist*, which yearns not for safety but risk, not for certainty but adventure, which thrives on experimentation, invention and novelty and not on nostalgia for the absolute, which devotes itself to new ways of manipulating protean particulars and not to the quest of undeviating universals.'

Jerome Frank, *Law and the Modern Mind* (New York 1930)

If the very sight of a mathematical equation is what puts the traditionally educated legal mind off the use of probability in legal analysis, here's my simple solution: Let's avoid using equations! Let's use visual representations of numerical methodologies and the results of intuitively correct and mathematically verified computer based

[3] René Descartes and the Fly on the Ceiling < https://wild.maths.org/ren%C3%A9-descartes-and-fly-ceiling > accessed 14 March 2018.
[4] Legal Realism < https://legal-dictionary.thefreedictionary.com/Legal+Realism > accessed 14 March 2018.

iterative techniques to inform our understanding of such logic based analysis. Surely the time has come when computers can at least assist with legal analysis in this area?

Almost 40 years ago another American cousin, Professor David Kaye of Arizona State University, had this to say on 'The Laws of Probability and the Law of the Land'[5]:

'Physicists, engineers, economists, geneticists, businessmen, actuaries, bookmakers, and casino operators prove, day in and day out, that the mathematical theory provides more useful and more accurate predictions of important phenomena than any alternative methods.'

40 years down the line, legal analysis and thereby the law has still not fully embraced or benefitted from the scientific logic and method that stems from the Enlightenment. But the advent of the digital age offers us a chance to rethink how we handle equations and thus how we can more appropriately educate future generations in the application of technology to social and legal matters.

David Lorimer BSc LLB LLM
March 2018

[5] David Kaye, 'The Laws of Probability and the Law of the Land.' [1979] The University of Chicago Law Review 47 (1), 34-56.

Introduction

In her Scots law textbook on *Evidence*, Fiona Raitt rightly states that 'there is no magic formula'[6] for making choices regarding credibility, reliability and versions of events in the adversarial process. Ultimately however, the law has a numerical effect, on the numbers going to trial, the numbers in prison and, in relation to these, the number of victims and potential victims of crime within a social science context[7]. Paul Roberts and Adrian Zuckerman consider the complexity of numerical and mathematical relationships in greater depth in their English Law textbook on *Criminal Evidence*[8], including a chapter section on 'Probability and Statistics'[9]. In addition, their qualitative view on 'Procedural Techniques of Risk-Allocation'[10] has the potential to open up a discourse involving a numerical approach to analyzing 'probative burdens, burdens of production and evidentiary presumptions'[11] as tools for quantitatively controlling the 'risk of error'[12] in criminal law, based on analytical methods[13]. Their section on 'The Criminal Standard As Reasoning Procedure'[14] underpins the 'story model'[15] approach to scenarios taken in the recent work on '*Arguments, scenarios and probabilities: connections between three normative frameworks for evidential reasoning'* carried out at the Universities of Groningen and Utrecht by Floris Bex and others[16].

The Scottish criminal jury is composed of 15 members compared to the 12 found in other common law jurisdictions. It requires a simple majority verdict which means

[6] Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 6 para 1-17.
[7] Fiona Raitt, 'Corroboration in Cases of Gender Violence: A Case for Special Treatment?' (2014) 18(1). ELR 93 (in particular the Conclusion on p97).
[8] Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010).
[9] Ibid 148. Reference also Mike Redmayne, *Expert Evidence and Criminal Justice* (OUP 2001).
[10] Ibid 224.
[11] Ibid 240.
[12] Ibid. (particularly under 6.3).
[13] Flores Bex and Douglas Walton, 'Burdens and Standards of Proof for Inference to the Best Explanation: Three Case Studies' [2011] LPR. 36.
[14] Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 258.
[15] Ibid 259.
[16] Bart Verheij and others 'Arguments, scenarios and probabilities: connections between three normative frameworks for evidential reasoning' [2015] LPR.

conviction or acquittal by 8 or more as opposed to a unanimous verdict or qualified majority (usually 10 or more in other jurisdictions). This means that the hung jury is not a feature of Scots law. The Scottish system is therefore arguably more efficient but is it less fair? Does it 'fly in the face of conviction beyond reasonable doubt' as some commentators have suggested? The numerical analysis outlined in the CGR section at the end of this paper uses decision tree analysis as a basis on which to develop and evaluate probabilities of conviction in both types of jury system. The results are presented graphically and provide a unique perspective on jury analysis, including the observation that the ‘rogue juror’ may be as much a numerical phenomenon as anything else.

I - All Things Are Number?

This paper has three main parts. The first part is a brief review of a few important philosophical ideas which endorse a numerical approach to analysis[17]. The second part is an example of how a very simple numerical analysis can provide a perspective on the quantity and quality of information which a jury has to take into consideration upon retiring to consider a verdict and how this supports a view of *Mackenzie* with respect to perceived, circumstantial or corroborating evidence, when he wrote, '*…in effect it is the ratio scientiae* (the rationale for knowledge or belief) *and not the deposition which proves in that case*.'[18] The third part of this paper is a discussion of the results of the numerical jury analysis presented in the CGR section at the end. It develops on the uncertainties discussed in the first two parts in conjunction with those results.

Pythagoras, Spinoza, Newton and Kant

'All Things Are Number' is a quote which is generally credited to the ancient Greek, Pythagoras of Samos (circa 570 to 490 BCE)[19]. It is not certain that Pythagoras actually said this, however it is clear that the perception of several fundamental mathematical relationships are credited to him[20], such as the fact the earth and planets are spherical, the sides of a right-angled triangle are numerically related[21] and that the ratios of the lengths of strings vibrating in musical harmony can be expressed in whole numbers[22]. His observations gave rise to a credo[23] that numerical relationships can be found in all things. Such perception required an open and aspiring mind with respect to

[17] On a personal note, having had a previous career as a consulting engineer, involving much project feasibility study, mechanical stress analysis and quantitative risk analysis, an underlying numerical approach to all things is a way of perceiving and a way of life: the first part of this paper is a manner of describing this in philosophical terms akin to how the foundations of law were recently taught to me as a re-born LLB undergraduate.

[18] Sir George Mackenzie, 'Probation by Witnesses' in Olivia Robinson (ed), *The Laws and Customs of Scotland in Matters Criminal* (first published 1678, Stair Society 2012) 388 para 16.

[19] The Stanford Encyclopaedia of Philosophy, 'Pythagoras' http://www.plato.stanford.edu/entries/pythagoras/ accessed 11 April 2016.

[20] Ibid.

[21] Pythagoras Theorem, '*The square on the hypotenuse of a right angled triangle is equal to the sum of the squares on the other two sides*'.

[22] Pythagoras founded a religious sect which believed that numbers and music were the essence of existence. Reference Frank Wilczek, *A Beautiful Question: Finding Natures Deep Design* (Penguin 2015).

[23] Ibid.

the belief that a) numerical relationships are likely to exist and that b) once found, they can be extremely useful.

The Limits of Knowledge

Taking this numerical credo from the physical world of science to the metaphysical world of criminal and legal theory might involve a very interesting and intellectually challenging Kantian discourse on how empirical knowledge[24] and mathematical reasoning could relate to social and moral perceptions in the understanding and regulation of crime. Kant (1724–1804) taught logic, mathematics, physics, metaphysics and ethics[25]. His examinations of the relationship between rational scientific thought and moral, philosophical and metaphysical belief[26] within the framework of human experience[27] was his answer to the intellectual dilemma of his time. This dilemma was prompted by the rise of Western scientific understanding, in particular through the work of Sir Isaac Newton (1642–1727)[28] and his *Philosophiae Naturalis Principia Mathematica* first published in 1687. Kant sought to address the question of how far human reasoning could go to provide a unified understanding of all things empirical, theoretical, physical and metaphysical, which included the religious, moral, ethical, legal and philosophical questions of his day. Kant indicated that given the limitations of the human condition, in that all knowledge is based on our experiential perception of the world around us, understanding the truth requires the best use of our reason[29], to quote from McCoubrey and White's *Jurisprudence*[30],

'If there is one thing that underpins all of Kant's work, is his belief in the primacy of reason. Very much epitomizing what the Enlightenment was all about, Kant believed

[24] The Stanford Encyclopaedia of Philosophy, 'Immanuel Kant' <http://www.plato.stanford.edu/entries/kant/> accessed 11 April 2016.
[25] Ibid.
[26] J.E.Penner and E.Melissaris, *McCoubrey & White's Textbook on Jurisprudence* (5th edn OUP 2012) 169.
[27] The Stanford Encyclopaedia of Philosophy, 'Immanuel Kant' <http://www.plato.stanford.edu/entries/kant/> accessed 11 April 2016.
[28] Ibid.
[29] Ibid.
[30] J.E.Penner and E.Melissaris, *McCoubrey & White's Textbook on Jurisprudence* (5th edn OUP 2012) 169.

that with the use of our reason we can master the truth about the world and harness our capacity to know and understand it but also arrive at conclusions as to the right thing to do in morality, politics, and law. Kant's aim was to connect reason and experience in a seamless whole.'

In the course of application of the criminal law and the attribution of criminal liability, it may often be stated that 'we'll never know the truth'. Just exactly what happened in the course of a particular crime and what was done, said or thought by the participants may remain a mystery, even to some extent to those who did the deed, made the statement or thought the thought in question. Before going on to a brief numerical exploration of this and how it ties into jury deliberations, it may be helpful to refer back to before Kant and the influential mathematical revelations of Sir Isaac Newton, to Spinoza (1632-1677) when he noted, in the development of logical, rational analysis, that to '*stop asking for the cause of causes*' is to take refuge in '*the sanctuary of ignorance'*[31]. The 'sanctuary of ignorance' Spinoza was referring to here was the will of a deity. However, the general truth of his statement may be regarded not only as axiomatic but also pragmatically inevitable in the course of all quests for knowledge. In the pursuit of criminal justice for instance, at some point, the seeker of truth or trier of fact in '*asking for the cause of causes*' will run out of time or resources or simply draw a blank. After which point, in the case of a criminal trial, a decision must be made, and for the hard-pressed but fair-minded members of the legal profession and of society in general, here it may be said somewhat cynically, that refuge may be found in the man-made sanctuary of the jury. Having developed a fair legal framework and adduced what may be perceived to be the best evidence, the decision making is left to that enigmatic and inscrutable incorporation of oracular citizenship which is the jury[32].

[31] The Stanford Encyclopaedia of Philosophy, 'Baruch Spinoza' <http://www.plato.stanford.edu/entries/spinoza> accessed 11 April 2016. In particular, in his Ethics I Appendix, '*…And so they will not stop asking for the causes of causes until you take ... the sanctuary of ignorance. …'.*

[32] Jerome Frank, *Law and the Modern Mind* (6th edn, Stevens & Sons Ltd 1949) 171 last line cites a quote from Edson R Sunderland, 'Verdicts, General and Special' [1919] Yale LJ 29: 253, 258 where he states, '*The general verdict is as inscrutable and essentially mysterious* as *the judgement which issued from the ancient oracle of Delphi*.'.

We generally accept that there are limits to what can be known in practical terms. This latter point is one that Kant made with respect to our empirical perception of reality as living, sentient beings. The 'noumenal' world, that is the real world around us whose actuality is merely sketched in the artificial theatre of our minds via the (limited) tools of our senses, can never be truly known by experience alone[33]. Reason sculpts empirical data as we perceive it to form a version of reality. Just as a jury must form a version of reality prior to reaching a judgement on the basis of the case laid before them via a legal infrastructure and evidential witnesses. In order to reach a verdict, each juror's understanding of the case will be deliberated upon collectively in the jury room according to their individual experience, attitude, opinion, comprehension and the social group dynamics of the jury. Given that the jury's experience of the events at issue in a particular case is legally filtered and delivered second hand through witnesses and the legal framework, the Kantian view of their perception of the truth is likely to be an extremely dim one. If we were to put Pythagoras, Spinoza, Newton and Kant on a virtual jury, what might their opening deliberations be? Here are a few possibilities based upon what is understood about their work:

Kant: There are limits to what can be known directly from our own senses let alone via the perceptions of others. We will need to optimize our use of reason.
Newton: Yes, I would rather focus on fact and physical evidence in the first place[34], hypotheses non fingo[35].
Spinoza: We should seek to question all the possible causes of events.

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[33] The Stanford Encyclopaedia of Philosophy, 'Immanuel Kant' <http://www.plato.stanford.edu/entries/kant/> accessed 11 April 2016.
[34] The story of Newton and his analysis of the law of gravity subsequent to having observed a falling apple is well known, University of York, 'Newton' http://www.york.ac.uk/physics/about/newtonsappletree/ accessed 08 April 2016.
[35] Appended to the 2nd (1713) edition of '*Principia*' is an essay, '*General Scholium*' where Newton notes he does not know the reason for the properties of gravity but '*hypothesis non fingo*' meaning 'I do not contrive (or feign) hypotheses'. S. Snobelen, A Brief Guide to Interpreting Isaac Newton's General Scholium to the Principia https://newtonprojectca.files.wordpress.com/2013/06/brief-guide-to-the-general-scholium-letter-size.pdf accessed 08 August 2016.

Pythagoras: We should ask those questions with an open mind with respect to potential numerical relationships in all things. Otherwise we may never discover or benefit from those relationships. That's one way to help optimize our use of reason.

We can develop a model of the proposed Kantian view of perception of real world events from the jury's perspective in a very basic arithmetical way. The following application of a relatively simple numerical analysis to the issue of knowledge transfer with respect to the jury's role in a criminal trial will serve as an illustrative example of hypothetical assessment. Such models may be debatable (defeasible) but the process of construction, the appreciation gained and the inter-relationships of the issues and the points of debate themselves provide deeper insight and understanding. It incidentally serves to demonstrate numerically how a military request such as '*send reinforcements we're going to advance*' can become the social invitation, '*send three and four-pence, we're going to a dance*'[36].

[36] Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 366 footnote 6.

II - Information Transfer During a Criminal Trial, a Numerical View

An individual might be said to 'process' the experience of an event (such as being present in the course of a criminal act) in the course of the following stages,

1. The event occurs.
2. Information about the event is assimilated via the individual's senses. Hearing and eyesight are of course the principal senses but the environment, situation and circumstances are perceived by all the senses acting together. At the same time subliminal associations are also occurring in the mind of the spectator[37].
3. Experience of the event gives rise to a belief in the mind of the individual, a picture or story if you will. This belief is not necessarily fixed and may change with time and with repeated consideration. This is likely to be particularly true if initial perception happens quickly in a stressful or fearful situation[38].

So to summarize we have,

Event – Sensory Perception – Intellectual Processing

On the basis that both perception and intellectual processing are of a relatively high calibre, let us say 95% accurate, and the individual has been party to 95% of the event, then the 'picture' might contain 95% of 95% of 95% of the truth, which multiplies out to leave a picture which is just short of 86% accurate.

Suppose now the witness has to stand before a jury and testify. What might be the next stages of information transfer before the jury have a collective picture in their minds? Following on from the three stages above we could break down the transferal as follows,

[37] Ibid 367, in particular at footnote 11.
[38] Ibid.

4. The witness must remember the events.
5. The witness communicates them to the jury via the answers to questions from counsel.
6. Sensory Perception of the jurors as stage 2 above.
7. Intellectual Processing of the jurors as stage 3 above.

To summarize stages 4 to 7,

Memory - Communication – Sensory Perception – Intellectual Processing

Assuming again we have an intelligent, attentive, open minded jury and that the witness is a very clear speaker and communicator and the legal counsel and the judge all work together to present an accurate picture of the truth, we might again allow for 95% accuracy in the last four stages, giving a picture in each jury member's mind which amounts to 95% of 95% of 95% of 95% of 86% of the truth, which multiplies out to be just short of 70% accurate.

This seems somewhat ideal when considering the old adage, '*believe half of what you see* (50%), *some or none of what you hear* (perhaps 5%?)'. So what might the picture look like in the light of that advice? The following table (Table I.1) compares 'picture accuracy' for high level accuracy in information transferals (all at 95% accurate as calculated above), medium level (all at 50% accurate) and low level (all at 5% accurate) transferals of information, with numbers generated using the multiplicative (mathematical product) approach described above.

Stage Transferal Accuracy	Witness Picture Accuracy	Jury Picture Accuracy
95%	86%	70%
50%	13%	1%
5%	0.01%	0.00%

Table I.1 – Percentage of Information Transferred

The table indicates that the low value (5% accurate transferal) effectively transfers none of the original information to the jury and the medium case (50% accurate transferal) is not much better at a retention figure of just 1%.

The Collective Observational Power of the Jury

In a Scottish jury there are 15 individuals sitting more or less with the same viewpoint and subject to the same representations for exactly the same periods of time in the same environment. The level of comfort in that environment will vary but is unlikely to be particularly stressful, at least until the time comes to retire and elect a foreman and then collectively to consider the evidence, the witnesses and ultimately the verdict. Each juror brings his/her lifetime of experience to bear and the exchange of understanding in the jury room, under lock and key[39], will to some extent be driven by those experiences, the personalities at play and their perception of the case. There is likely to be 15 different pictures of the truth of the events in question in the minds of the jurors but they will have the opportunity to discuss matters in order to collectively reflect on them and process them further. A minimum of 8 jurors are required to be in agreement to reach a guilty verdict. Leaving aside the accuracy of what has been adduced at trial for a moment, the chances of any 8 from 15 collectively being wrong in their observation of what has actually transpired *in the course of the trial itself* may be minimal. The transfer of information at stage 6 in the chain of events described above, the collective sensory perception of the jury, will therefore probably have an effectively higher level of accuracy. Similar may be true of stage 7 above in terms of collective intellectual processing, at least as far as processing stage 6 information goes. As we now have a simple numerical model of information transfer, it can be modified to show what happens to the accuracy of the jury's picture of events when stages 6 and 7 are each revalued at 95% for the medium and low levels of information transfer. The adjusted picture is presented for comparison in Table I.2 below.

[39] Sheehan, *Criminal Procedure in Scotland and France* (HMSO 1975) 167 para 207.

Stage Transferal Accuracy	Witness Picture Accuracy	Jury Picture Accuracy
95%	86%	70%
50%	13%	3%
5%	0.01%	0%

Table I.2 – Adjusted Percentage of Information Transferred
(Post Jury Room Discussion, Stages 6 & 7 Changed to 95% Transferal)

So despite the idea that the 'collective human observation powers' of the jury as indicated by using enhanced information transfer values at stages 6 and 7 sounds promising, the figures for the information transfer accuracies presented in Table I.2 indicate that this is next to nothing for the low and medium values as the jury picture accuracy only increases to between 0% to 3% over that range. The transfer accuracy in the medium to high range however indicates an exponentially increasing rise in the change of accuracy to between 3% and 70% due to jury room enhancement by discussion.

Interestingly therefore these numbers are indicating that the accuracy of collective understanding by the jury of the story as represented in court is not practically better than that of an individual for a poorly represented story (low and medium values). For a better represented courtroom story, the enhancement of the collective picture (post jury room discussion) over that of an individual appears to improve exponentially. This intuitively makes some sense because a more detailed presentation will be generally better understood and remembered by a collaborative group than by any single member of an audience (students generally find this when discussing or comparing lecture notes for example). Lord Diplock's view that

'*…there is safety in numbers, and shared responsibility and the opportunity for discussion after retiring serves to counteract individual idiosyncrasies…*'[40]

[40] *Walters v R* [1969] 2 AC 26 30 PC. See also Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 256 at end of first para and footnote 123.

also supports a belief in the collective power of the jury to enhance individual understanding in the context of jury room discussion[41].

The idea of 'jury room enhancement by discussion' needs to be reviewed however. The notion that the jury room discussion (which would perhaps be better represented as an additional discrete stage or stages in the model[42]) can change previous stages of information transfer is a false one. Discussion in the jury room will not change the conscious, associative and subliminal experiences that the jurors will have already had in the courtroom. Some specific thoughts can clearly be developed during points of discussion in the jury room however. These discussions and developments take place within a framework of legal ideas, a framework of technical tasks if you will, which have a particular scope, content, set of limitations and focus, all as superimposed by the judge and perceived by the jurors. On this last point it is worth quoting Roberts and Zuckerman where they note in their text with regard to burdens and presumptions[43],

'*In the final analysis, the court can only advise and cajole a jury to approach the task of adjudication in the proper spirit, using the law's officially-mandated decision procedures. A trial judge cannot be certain that the jury will even comprehend the instructions issued in his summing up, let alone being confident that his advice will be taken to heart.*'

Thus the burdens of evidence and legal proof are transferred to the jury as burdens of analysis and decision-making, and legal presumptions are superimposed on the human story or picture as assimilated by each member the jury in the course of the court room representations. The point of transfer is when the judge addresses the jury at the end of the trial. Prior to this they will have had no substantial legal instruction on their duties from the judge[44]. Although in theory a juror may question any witness with the judge's

[41] Ibid.
[42] The jury room deliberations may be considered as the final stages whereas the important summing up and task allocation by the judge would fall between those and stage 7.
[43] Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 265, para 2.
[44] Sheehan, *Criminal Procedure in Scotland and France* (HMSO 1975) 161 ('Duties of the Jury').

consent, this is a right 'never exercised[45]' and the role of the jury is thus 'spectatorial' until it retires to consider the verdict, at which point the jury formally becomes the 'trier of fact[46]' and perhaps more optimistically, 'master of the fact[47]'.

The Technical Tasks and Limitations of the Jury

Within the general legal framework outlined by the judge and as understood by the jury, the jurors have to address the charges as presented by the prosecution and this should revolve around the *facta probanda* ('facts to be proved[48]'), 'those matters in dispute between the parties[49]' and subject to directions provided by the judge in his address after the defence stage[50]. The judge may have directed that special scrutiny be given to certain key aspects of evidence, particularly for instance the acceptance of testimony by a person involved in the crime who has been called as a prosecution witness instead of being prosecuted[51]. Another evidential area that may be highlighted for special attention by the judge is the reliability of an eye witness where their observation may have been fleeting or of a one-off nature[52]. Circumstantial facts[53], also known as *facta probationis* (facts of the proof or, literally, the 'testing[54]' facts), are facts that have a probabilistic bearing[55] on the essential or crucial facts (*facta probanda*). The *facta probanda* require corroboration whereas the *facta probationis* do not[56]. The jury is therefore not required to comprehensively compare notes on the overall picture they have built up (though some comparison is inevitable), rather they should be focused on the legal issues and their collective assessment of the accuracy or otherwise of the relevant *facta probanda* and *facta probationis* as presented by the

[45] Ibid.
[46] Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 6 para 1-17.
[47] Sheehan, *Criminal Procedure in Scotland and France* (HMSO 1975) 161 ('Duties of the Jury').
[48] Derek P Auchie, *Evidence (4th edn, W.Green 2014*).
[49] Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 8 para 2-02.
[50] Sheehan, *Criminal Procedure in Scotland and France* (HMSO 1975) 167 para 206.
[51] Ibid.
[52] Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 687 (reference English Turnbull Warnings).
[53] Also termed 'evidential facts'. Reference Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 121 ('Distinguishing Crucial Fact from Evidential Facts').
[54] *Collins Latin Dictionary* (HarperCollins 1996) 277.
[55] Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 9 para 2-05.
[56] Ibid 121-122.

witnesses and highlighted by counsel and the judge. The jury will have been given an appreciation of the presumption of innocence in that the burden of proof is upon the prosecution and that it is the latter who are required to prove their case to the jury's satisfaction beyond reasonable doubt[57]. It is unlikely that any judge will use such Latin terms because, although they may encapsulate concepts in law with a particular philosophical clarity, the tendency to confuse the jury with additional legal concepts, jargon and definitions is clearly something to be avoided[58].

The definitive meanings of legal and technical issues are not something the jury can be expected to analyse. The technical and judgemental limitations of the jury are accommodated to a degree by the legal framing of the issues as presented to them so that they may have a narrow and, hopefully, fair focus on the key legal issues, the facts of the case and on the evidence to be considered. This does not mean the task of the jury is handed over to them 'cut and dried' and ready for processing, far from it. For instance, special defences[59] and other such (statutory[60]) situations where one or two specific reversed burdens fall upon the accused have also to be considered to the best of the jury's ability. This has been a difficult area for the judiciary let alone the jury, as Raitt states,

'*The reverse onus of proof in serious cases on indictment before a jury has created considerable disquiet in the English appellate courts*[61]*...It occurs because the imposition of a persuasive burden on the accused requires the accused to prove some fact or other on a balance of probability*[62].'

[57] Sheehan, *Criminal Procedure in Scotland and France* (HMSO 1975) 167 para 206 (judge's address).
[58] Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 9 at footnote 3.
[59] Ibid 76 para 5-16 reference the evidential burden being upon the accused for the special defences of alibi, self-defence, incrimination, automatism and coercion, the burden of proof (the persuasive burden) remaining with the Crown.
[60] Ibid 79-80, the special defence of mental disorder must be raised by the accused and proven by the defence on the balance of probabilities, per the Criminal Procedure (Scotland) Act 1995 s 51A(4). Reference also the Road Traffic Act 1988 s 4(3) and s 5(2) where the defence has to prove the accused had no likelihood of driving whilst in charge of a vehicle and under the influence of alcohol or drugs.
[61] Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 85 para 5-34.
[62] Ibid 86 in particular para 5-34.

This appears to defeat the requirement for a higher standard of proof in the criminal law (i.e. beyond reasonable doubt), in that a person might be convicted despite there being a reasonable doubt, because proof to the balance of probability has not been achieved by the defence[63]. In such cases the task of the jury can become paradoxical, particularly in the light of ECHR Article 6(1), the right to a fair trial and Article 6(2) on the presumption of innocence[64].

The final two technical tasks imposed on the jury by the judge relate to the verdict and to corroboration. When the majority of the jury find the case against the accused proven beyond reasonable doubt, the verdict is guilty. Otherwise the verdict will be either not guilty or not proven. The latter verdict has been historically linked to a lack of corroboration[65]. The requirement for corroboration, as it has come to be known as a common law rule, was described by Lord Justice-Clerk Aitchison in Morton v HMA in 1938[66] in that:

'*[N]o person can be convicted of a crime or a statutory offence except where the legislature otherwise directs, unless there is evidence of at least two witnesses implicating the person accused with the commission of the crime or offence with which he is charged.*

This rule has proved an invaluable safe-guard in the practice of our criminal courts against unjust conviction and it is a rule from which the courts ought not to sanction any departure.'

As noted previously, it is only the facts at issue, the *facta probanda*, which require corroboration, the *facta probationis* do not. The circumstances of the case determine

[63] Ibid 85 para 5-34 referring to Lord Nicholls warning in *R v Johnstone* [2003] 1 WLR 1736, 1750.
[64] Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 272-282. See also Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 85-86 paras 5-34 & 5-35.
[65] Sheehan, *Criminal Procedure in Scotland and France* (HMSO 1975) 161 para 201 ('Duties of the Jury') and 167 para 207 ('Verdict').
[66] Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 123 in particular para 8-15 citing *Morton v HMA* (1938) J.C.50.

the extent to which the judge has to impart an understanding of modern variations on the second witness requirement with respect to, for example, routine (documentary) evidence, identification of the accused, statutory exceptions, mutual corroboration (the *Moorov* doctrine) and recent distress of the victim[67] as means of providing the necessary corroboration.

The corroboration requirement, in common with 'reverse onus of proof' considerations, thus adds complexity to the framework of technical tasks imposed upon the jury.

Facta Probationis, 'Facts of the Proof'

To return to the previously proposed Kantian analogy between a jury's limited perception of the truth of a case and an individual's limited perception of the world s/he inhabits, the individual is informed of experience via the five senses, of which the abilities to hear and to see are paramount. The jury is partly informed of events in a case by the sight and sound of witnesses, in turn relating their own sensory experience and perceptions. Although the trial may be regarded as an artificial and second hand representation of the truth, it is for the jury, particularly in Kantian terms, a fundamentally important connection with the events of a crime within the context of human experience, perception, understanding and communication, including as it does perceptions of body language, subliminal associations, personal appearance, clothing, use of language and reaction to examination and cross-examination. Before retiring to consider the verdict, the jury will also have been presented with, or at least perceived, possible conflicting narratives, arguments, stories or scenarios. This is the other part of the jury's experience at trial, and in terms of our Kantian parallel that the jury's 'artificial' trial experience simulates an individual's 'real world' experience, the perceived narrative(s) alone might be described as both 'surrogate sense' and 'surrogate reasoning' since it is in effect imposed upon the jurors externally. The plausibility, likelihood and adversarial merit of a story is what is intended to influence and inform the opinion of the jury in their deliberation on what is true and what is

[67] Ibid 125-142.

not[68]. In 1678 McKenzie may have been making this point when he wrote about sufficiency and proof in the context of perceived or circumstantial evidence[69],

'…*(I)n those things that fall not under sense* (not directly seen or heard by the witness), *the ratio scientiae* (reason or rationale for knowledge or belief) *must be given, whether it be asked for or not, because in effect it is the ratio scientiae, and not the deposition, which proves in that case.*'

Thus it could be argued that the 'ratio scientiae' effectively, in a second-hand way, forms part of the faculty of perceptive senses where that artificial being, i.e. the jury, is concerned. The jury must accord with the rationale behind a story or picture which they have individually and collectively (or at least the majority of them) bought into as being representative of the events at issue and not just the deposition of any individual witness. In this respect the jury's perceptive senses are hearing, seeing and assimilating a story (or stories) or picture(s) as presented by both witnesses and counsel. It could therefore be argued that the jury's ultimate job is less one of ascertaining the truth (mastering the facts) and more one of assessing the fit of whatever *facts* it collectively believes, to the story or stories[70] (trying the facts).

The amount of 'truth' which can be relayed to and processed by the jury is likely to be quite limited. They are presented with disputed facts. They are presented with other people's *ratio scientiae* which they then have to reason with both individually and as a group. The average juror is inundated with information and legal tasks which in some (many or even most?) cases might be overwhelming. They work out a verdict however they can, at best perhaps attempting to agree on the 'best explanation'[71].

[68] N Pennington and R Hastie, 'The story model for juror decision making' in R Hastie (ed), *Inside the Juror* (CUP 1993) 192.
[69] Sir George Mackenzie, 'Probation by Witnesses' in Olivia Robinson (ed), *The Laws and Customs of Scotland in Matters Criminal* (first published 1678, Stair Society 2012) 388 para 16.
[70] N Pennington and R Hastie, 'The story model for juror decision making' in R Hastie (ed), *Inside the Juror* (CUP 1993) 192.
[71] Flores Bex and Douglas Walton, 'Burdens and Standards of Proof for Inference to the Best Explanation: Three Case Studies' [2011] LPR 36.

Our own individual perception of the real world may be likened to a 'join the dots' picture-puzzle, the empirical data which comes in via our senses are the dots, and the art of our reason joins them to form an artificial picture in our minds, as a representation of reality. The more dots ('facts') and the better our reasoning (art of reasoning), the better the picture. For a jury, the dots that are relayed to them are generally second hand, scant, dubious and sketchily pre-connected in any number of ways by other people's *ratio scientiae*, all within that legally framed, artificial theatre of experience which is the courtroom.

So far this paper has ranged from consideration of an ancient numerical credo to an attempt to apply (in a very small, defeasible way) some enlightenment philosophy to the criminal process. A simple numerical analysis was developed to substantiate the reason for belief that a jury's perception of the truth is likely to be considerably less than accurate. In doing so, the factors which contribute to that analysis and the number of stages in the relay of information from the crime to the jury room have been considered. This is not the 'magic formula' alluded to by Raitt[72] and neither is it the answer to Wigmore's question[73] *'...why can we not set down and work out a mental probative equation*?'[74] which was asked in the first half of the twentieth century[75]. Nor, in and of itself at least, does it do much to advance the legally analytical computer science based Artificial Intelligence movement as promoted in more recent years by Paul Roberts and Mike Redmayne[76] or by Floris Bex and others[77]. It does however apply a method of analysis not too dissimilar to that which has been pragmatically and successfully used in industrial risk analysis. This type of numerical analysis, together with the aforementioned ground-breaking work of Wigmore, Roberts, Redmayne, Bex and others ultimately supports the idea that numbers can be read into most things.

[72] Fiona Raitt, *Evidence, Principles, Policy and Practice* (2nd edn, W. Green 2013) 6 para 1-17.
[73] Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 166.
[74] John Henry Wigmore, *The Science of Judicial Proof* (Little, Brown & Co. 1937) 8.
[75] Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 166 particularly at footnote 144.
[76] Paul Roberts and Mike Redmayne (eds.), *Innovations in Evidence and Proof* (Hart 2007). See also Paul Roberts and Adrian Zuckerman, *Criminal Evidence* (2nd edn, OUP 2010) 259 in particular at footnote 135.
[77] Flores Bex and Douglas Walton, 'Burdens and Standards of Proof for Inference to the Best Explanation: Three Case Studies' [2011] LPR 36.

After all it can be argued that numbers are merely a conceptual tool for theoretical assessment and comparison, abstractions or 'abstract objects' for use in the reasoning process[78].

As far as evidential reasoning is concerned, if applying or 'reading in' some numerical perspective has the potential to improve or support the understanding of any '*ratio scientiae*', even by the smallest of measures, it is worthy of investigation. It is just another way to continue asking for the *cause of causes*.

Regarding the model of information transfer presented here with respect to corroboration, it tends to support Redmayne's point that '*…instructing a jury to convict only on proof beyond reasonable doubt would, it could be argued, already be instructing the jury to find corroboration…*'[79] because unless a single witness or adminicle told a story particularly well, transferring sufficient information to convince a jury they would have a clear enough (reasonably doubtless) picture on which to convict appears difficult to achieve.

One last philosophical point in relation to historical jurisprudence. In *McCoubrey & White*[80] there is an interesting note that may relate Kant's 18th century philosophy to what Mackenzie said about the *ratio scientiae* as proof ('*…in effect it is the ratio scientiae…which proves…*'[81]*)* in the 17th century,

'*The starting point in Kant's moral philosophy is the 'factum of reason'. What factum means here is open to interpretation. Some interpret it as 'fact' some as 'deed', while others regard it as meaning more or less 'premise'. The precise meaning will have serious repercussions for the plausibility of Kantian moral philosophy…*'

[78] We Love Philosophy, 'Do Numbers Exist', http://www.welovephilosophy.com/2012/12/17/do-num accessed 08 April 2016.
[79] Mike Redmayne, 'Corroboration and Sexual Offences' [2006] JR 309, 313.
[80] J.E.Penner and E.Melissaris, *McCoubrey & White's Textbook on Jurisprudence* (5th edn, OUP 2012) 169.
[81] Sir George Mackenzie, 'Probation by Witnesses' in Olivia Robinson (ed), *The Laws and Customs of Scotland in Matters Criminal* (first published 1678, Stair Society 2012) 388 para 16.

Could it be that the '*factum of reason'* and the '*ratio scientiae…which proves*' have conceptually the same root, in essence being that *the reasoning makes it so*? According to *McCoubrey & White*, the precise meaning of *factum of reason* is not really our concern in terms of legal theory, but given that Mackenzie may be referring back to the jurisprudence of Roman Law (*'…in the opinion of the doctors*.'[82]), thereby possibly more clearly relating the *facta probationis* (the 'testing[83]' facts) to the *facta probanda* ('facts in issue[84]' to be tested), the *factum of reason* could be what takes a story, already perceived in the courtroom as being believable, to being believed 'beyond reasonable doubt'. Perhaps without this extra *factum of reason* (*x-factor*?) a jury may be hung or a juror may vote Not Proven in an otherwise apparently plausible case for conviction.

The grey area between guilty and innocent, the area upon which society and the law asks jurors to deliberate, will be further analyzed from process value and quantitative perspectives in the next part of this paper[85].

[82] Sir George Mackenzie, 'Probation by Witnesses' in Olivia Robinson (ed), *The Laws and Customs of Scotland in Matters Criminal* (first published 1678, Stair Society 2012) 387 in particular under '*Singularitas Adminiculativa*' (corroboration).
[83] *Collins Latin Dictionary* (HarperCollins 1996) 277.
[84] Fiona Raitt, *Evidence: Principles, Policy and Practice* (2nd edn, W. Green 2013) 9 in particular para 2-05.
[85] Parts I and II of this paper together with some of the introduction are largely reprinted from the introduction and chapter I of David Lorimer, *Corroboration in Scots Criminal Law: A Numerical Approach* (AU Master's Thesis 2016). Consideration of the 3rd verdict in relation to a hung jury developed from the CGR work produced in spring 2017.

III – The 3rd Verdict

The Not Proven verdict is currently under scrutiny[86]. Scotland's 3rd Verdict has been described variously as an accident of history and a modern legal anomaly[87], but the numerical work graphically presented in the CGR section (see page 29) visually highlights a parallel between what may be described as the process value[88] drivers underpinning the 3rd Verdict and the pragmatic or de facto drivers leading to a hung jury in the 12-juror system. It is clear from the graphs that as the verdict requirement moves from unanimous to qualified majority to simple majority, the associated probabilities for a hung jury fade so that with the odd-numbered Scottish system, the Not Proven option may be the last remaining vestige of a 'too close to call' option. The last chance to declare for a missing *x-factor* in a peer-pressured environment.

A Google search for 'hung jury trial' brings up numerous recent cases from 12-juror jurisdictions where reaching a unanimous or qualified majority decision has been dramatically difficult or impossible. For example, in March of 2017 a U.S. law firm posted a comment on its website highlighting the pressures in the American jury room:

'After a month-long trial and five (5) days of jury deliberations…the Court yesterday declared a mistrial based upon the jury's failure to reach a unanimous verdict..."A Not Guilty Verdict in a Murder trial is never an easy decision for a jury to make, so I am pleased that at least some of the jurors were convinced enough to hold their ground. This is the second Hung Jury/Mistrial and my client has been in jail for nearly five (5) years, so a Motion to Dismiss will be filed prior to a third retrial."[89]

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[86] Scottish Government, 'Jury Research' (24 September 2017) <https://news.gov.scot/news/jury-research> accessed 21 February 2018.
[87] Ruth O'Donnell, 'No, ''Not Proven'' did not come first' < http://schooloflaw.academicblogs.co.uk/2017/09/27/no-not-proven-did-not-come-first/> accessed 15 March 2018.
[88] Pamela R Ferguson, 'Reforming Scottish Criminal Procedure: In Search of Process Values'[2016] Bergen Journal of Criminal Law and Criminal Justice 167, 195.
[89] Dash Farrow LLP, '2017 | Murder Trial Ends in Mistrial | Hung Jury/Mistrial' http://www.dashfarrow.com/2017-murder-trial-ends-mistrial-hung-jurymistrial/ accessed 13 March 2018.

Last November *The Telegraph* reported online on the recent 'Parachute Trial' in England:

'The jury in the case of an army sergeant accused of attempting to murder his wife by tampering with her parachute has been discharged after failing to reach a verdict…The discharging of the jury came after an extraordinary row broke out between the seven women and three men, who were trying the case, and the judge. On Wednesday Mr Justice Sweeney discharged two female members after being told that they were suffering from "stress related illnesses"…It is not clear when any re-trial will take place.' [90]

Is the hung jury therefore a failure of the 12-juror system, requiring another lengthy, stressful and expensive (re-)trial, procedurally and coincidentally merely another accident of history or modern legal anomaly[91]? Or is it a statement of process value[92], legal manifestation or de facto verdict in itself? The work presented here in the CGR section (page 29) came about after consideration of the tossing of a coin during a three day basic statistics course for postgrads. We think of an everyday coin in such exercises: a relatively thin symmetrical disc with an unbiased weight distribution. In reality, there is no doubt that there is an element of chance involved in any legal trial and if we consider that it is the job of lawyers to redefine the evidential coin's geometry to the extent that each side in the adversarial process is engaged in a contest to construe the coin, or at least their own side of it, so that when the jury tosses it, it is most likely to fall in a predetermined way, then we perhaps start to see that the shaping of such a hypothetical coin can be a significant factor. In the end the epistemological coin that is given to the jury to play with may be somewhat amorphous and extruded (perhaps more of a cone than a coin?) to the extent that it should really be no surprise

[90] Martin Evans, 'Parachute trial: Jury discharged after failing to reach verdict as members deny 'bullying'' https://www.telegraph.co.uk/news/2017/11/23/parachute-trial-jury-discharged-failing-reach-verdict/ accessed 13 March 2018.
[91] Ruth O'Donnell, 'No, ''Not Proven'' did not come first' < http://schooloflaw.academicblogs.co.uk/2017/09/27/no-not-proven-did-not-come-first/> accessed 15 March 2018.
[92] Pamela R Ferguson, 'Reforming Scottish Criminal Procedure: In Search of Process Values'[2016] Bergen Journal of Criminal Law and Criminal Justice 167, 195.

at all if it doesn't fall very easily to one side or the other. In fact the surprise may be that it more often does seem to fall, eventually at least, in one of two apparently preconceived ways.

Quantitative Methodology

The Scottish criminal jury requires a simple majority verdict which means conviction or acquittal by 8 or more out of 15 as opposed to a unanimous verdict or qualified majority (usually 10 or more in 12 juror jurisdictions). 8 out of 15 seems more like a slight tilt on the balance of probability than a convinced or convincing majority, so does it fly in the face of conviction beyond reasonable doubt? Or is such doubt more fairly and squarely represented by the Not Proven vote? Quantitative analysis has been carried out using decision tree logic as a basis on which to develop and evaluate probabilities of conviction in both types of jury system (see the CGR section on page 29). The Verdict/Outcome column of the decision tree resolves into an iteration of Pascal's Triangle[93] which is used as the basis for a computer algorithm. The results, which have been calculated using *Excel*, are presented graphically underneath the four juror decision tree (page 29). They provide a unique perspective on jury analysis, including the observation that a 'rogue juror' may be as much a numerical inevitability as anything else. This is because the probability of achieving unanimity of a particular verdict by random chance alone ranges from approximately one in four thousand in the 12-juror system to less than one in 14 million with Scotland's 15 jurors and three verdicts.

[93] William L Hosch, 'Pascal's triangle' < https://www.britannica.com/science/Pascals-triangle > accessed 13 March 2018.

Consideration of the CGR graphics raises a number of propositions:

1. The drivers for a Not Proven vote or verdict may be closely related to those which lead to a hung jury, leading to the concept of the *Hung Juror* (see below).

   The 15 juror graph is predicated on there being no difference between a Not Proven and a Not Guilty vote (the ‘‘Not Proven’ Null Hypothesis’). If the option to vote Not Proven makes a Guilty verdict less likely because a *Hung Juror* (see below) will be less inclined chose the Guilty option, the graph will be slewed to the right, more closely reflecting the shape of the 12 juror graphs.

2. The option to vote Not Proven in Scotland can relieve the pressure on a *Hung Juror* to make a peer driven, biased or otherwise uneasy decision without compunction.

3. The hung jury may be regarded as a de facto third verdict reflecting an insufficiency of persuasive evidence.

   Per proposition 1 above in that the drivers leading to both outcomes may be seen as a natural, inherent or required due process phenomenon, as reflected by the Hung Jury graphs in relation to the other graphs and the Null Hypothesis.

4. The simple majority may be a timely indication of how a Scots jury would ultimately vote if given a mandate to reach a unanimous or qualified majority verdict.

   This is based on the idea that the peer pressure of an initial majority will tend to shift the voting in their direction over time. Perhaps not in every case but peer pressure by its nature is a compelling force, especially in the relatively confined and time-constrained environment of the jury room.

In Conclusion

The hung jury can be regarded as a de facto third verdict and Scotland's not proven verdict is arguably an empowering version of the 'too close to call' option in modern comparative jurisprudence – regardless of its historic evolution.

The conflict between the requirement for secrecy which is legally imposed on the jury's oracular fact-finding process and the principle that justice should be seen to be done is somewhat mollified by the small window of transparency offered by a 3rd Verdict. It is perhaps worth noting here that, according to Grant and Sutherland's 'Scots Law Tales'[94], the trial of Oscar Slater, one of the infamous miscarriages of justice involving prejudice and mistaken identity, turned on a narrow majority of nine guilty votes, with one not guilty vote and no less than five for not proven.

The 3rd Verdict may also be viewed as a concession to the frailty of human reasoning in those who, despite not being blessed with the enlightening powers of a legal education, have been ultimately handed the task of providing the answer to what is often an inscrutable, intractable and convoluted legal and practical problem, under varying conditions and perceptions of prevailing social, psychological, environmental and procedural pressures. In reality, every coin has three surfaces and the de jure 3rd Verdict can reflect the de facto shape of the evidential coin[95] as a juror perceives it and as manifested by a hung jury in 12 juror jurisdictions.

The use of accessible computer software (*Excel*) has allowed fresh and separately supportive visual and numerical process perspectives on jurisprudential, quantitative and comparative analyses of jury verdicts. The enabling software application greatly simplifies complex and time consuming probabilistic calculations by using a simple and intuitively clear decision tree model as a scalable and iterative foundation.

[94] Clare Connelly, ' A great miscarriage of justice: Oscar Slater' in John P Grant and Elaine E Sutherland (eds), *Scots Law Tales* (DUP 2010).

[95] Part III of this paper is a development of Aberdeen University's Unilaw blog, David Lorimer, 'Hung Jury – The De Facto Third Verdict' < https://aberdeenunilaw.wordpress.com/2017/10/11/hung-jury-the-de-facto-third-verdict/> accessed 15 March 2018. The blog also been accepted for publication in the Scottish Legal News Annual Review 2018.

Computer Generated Results (CGR)

(A presentation poster put together for the University of Aberdeen's American Summer School in 2017)

SCOTLAND'S 15 JUROR COURTROOM v THE 12 JUROR SYSTEM

What Are The Relative Chances of a Conviction?
A 'Not Proven' Null Hypothesis (H_0)

UNIVERSITY OF ABERDEEN

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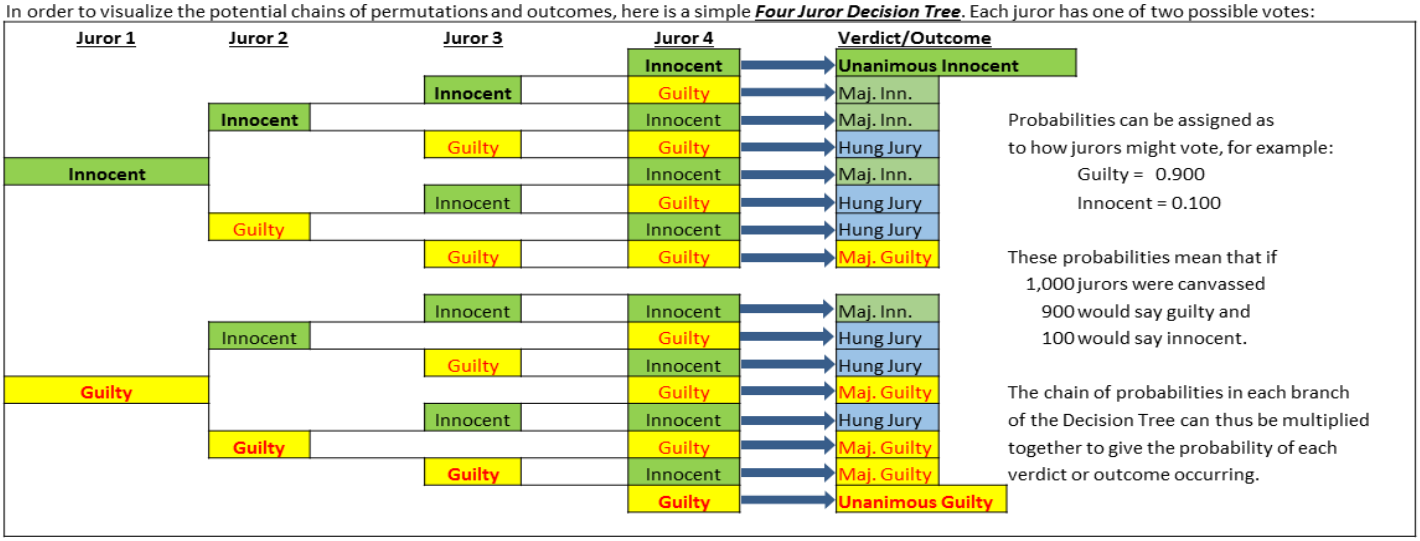
In England and elsewhere, 12 jurors have a choice of two verdicts. Each juror votes in turn and with each of the 12 successive votes, the number of permutations doubles so that after 12 votes there are 4,096 permutations.

In Scotland, 15 jurors have a choice of three verdicts. Each juror votes in turn and with each of the 15 successive votes the possible permutations increase greatly. By 15 votes the total number of permutations is in excess of 14 million.

The assumption here (H_0) is that a vote for 'Not Proven', Scotland's 3rd verdict, can be regarded as a not guilty vote without skewing the outcomes. The innocent/guilty dichotomy thereby yields 32,768 juror voting permutations in Scotland. That's still 8 times more than in England and elsewhere.

Permutations

In order to visualize the potential chains of permutations and outcomes, here is a simple ***Four Juror Decision Tree***. Each juror has one of two possible votes:



Probabilities can be assigned as to how jurors might vote, for example:

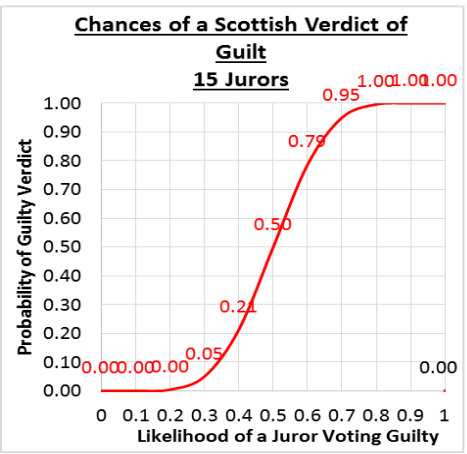
Guilty = 0.900

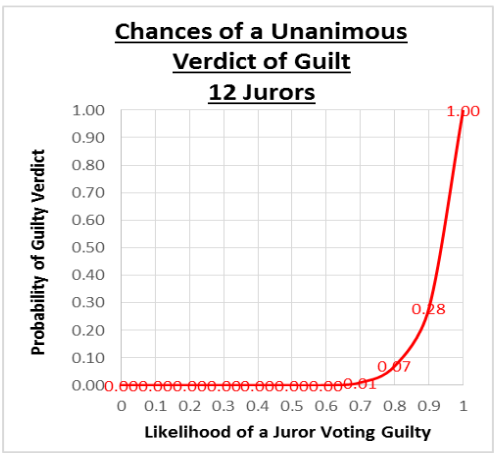
Innocent = 0.100

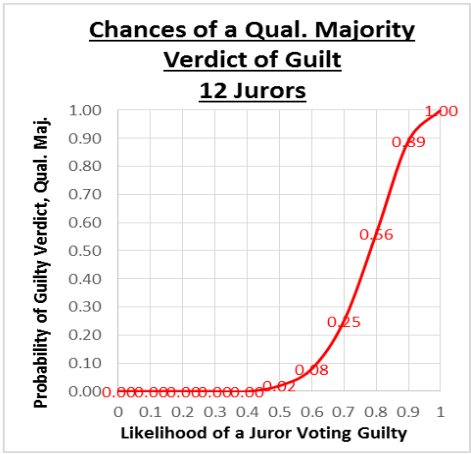
These probabilities mean that if 1,000 jurors were canvassed 900 would say guilty and 100 would say innocent.

The chain of probabilities in each branch of the Decision Tree can thus be multiplied together to give the probability of each verdict or outcome occurring.

The 4 Juror Decision Tree demonstrates that if the chances of a guilty or innocent vote are even there are 16 equally probable outcomes, 1 unanimous innocent, 4 majority innocent, 6 hung juries, 4 majority guilty and 1 unanimous guilty. This is a scalable pattern and the process of assigning probabilities to each juror's decision in the tree allows likelihoods of each verdict to be calculated. Such a procedure is called an *algorithm* and a computer can readily calculate the results:







The unanimous verdict is thus the most difficult to achieve and any 'rogue juror' may be due to mathematics as much as any group dynamics.

Modifying the unanimous verdict to a qualified majority of 10 or more reshapes the chances of conviction to be more in line with the Scottish simple majority, however the hung jury remains a moderating feature of the 12 juror system.

Is it true to say the simple majority reflects some reasonable doubt? The qualified majority may also be regarded as reflecting reasonable doubt and in social terms the question is '*Is the majority always right*?'. Ancient republicans may have answered '*It is when the Rule of Law says it is*'. However, this may prove to be a defining question of our time.