BIG DATA AND THE ESSENTIAL FACILITIES DOCTRINE: A LAW AND ECONOMICS APPROACH TO FOSTERING COMPETITION AND INNOVATION IN CREATIVE INDUSTRIES

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Abstract: This article examines the growing market power of global streaming services in creative industries for video and music, and the intellectual property investments and inputs in these services. The author considers the prevalence of big data in these industries, enabling the development of highly targeted content, thereby dramatically reducing the potential of failure, and mitigating the cost of investment. The author examines the suitability of traditional intellectual property laws for creative works driven largely by data inputs. The possibility of utilising the essential facilities doctrine to impose a duty to licence on these undertakings and the impact that could have on competition, innovation, incentives, and the economic functioning of creative industries is explored.

A. INTRODUCTION

Big data undoubtedly offers profound opportunities for innovation and disruption across all industries. Big data and analytics can lead to substantial reductions in cost for businesses and the global market revenues for big data and business analytics had an estimated value of $171.39bn (~€145.96bn) in 2018, rising to a potential $512.04bn (~€436.07bn) by 2026.[1] While innovation is instrumental in fostering competition, the use of big data can increase market concentrations and act as a barrier to entry. There is a significant first mover advantage associated with the possession and use of big data, which can lead to market foreclosure and decrease consumer welfare. Consideration, however, must also be given to the benefits of big data in offering profound market insights such that the risks incurred in bringing a new product to market may be dramatically decreased, reducing risk premiums, and leading to greater innovation and scale efficiencies. This is particularly relevant in creative industries where the so called 'dry-hole phenomenon' or unavoidable risk of failure can substantially reduce the

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[1] 'Big Data and Business Analytics Market Size is Projected to Reach USD 512.04 Billion by 2026 | Valuates Reports' (Bloomberg Business, 11 February 2020) <https://www.bloomberg.com/press-releases/2020-02-11/big-data-and-business-analytics-market-size-is-projected-to-reach-usd-512-04-billion-by-2026-valuates-reports> accessed 5 April 2021.

 DOI: https://doi.org/10.14324/111.444.2052-1871.1206.

number of works produced. As a result, profits from successful works are often used to mitigate the losses incurred by record labels and film studios from failures, thereby reducing the revenue accruing to successful artists.

The extent to which market insights offered by big data analytics can be used to shape creative outputs is extensive. Computational or data-drive creativity is a form of creative production whereby the creative process is heavily or entirely shaped by analysis of big data. For example, music has already been created entirely by algorithms based on consumer preferences.[2] Famously, Netflix invested $100m (~€89.3m) in the show 'House of Cards' on the basis of such analysis.[3] These works give rise to questions of intellectual property rights (IPRs) and ownership: at what level of algorithmic involvement does a work become a result of computational creativity? Who is the owner of such works? Should these works be granted traditional IPRs?

This moment in time is likely to mark a turning point in how creative works are perceived and protected. The disruption caused by these technologies has created a sea change in creative industries and has led to higher levels of market concentration, while simultaneously dramatically changing market shares held by traditional film and music studios. It is of paramount importance to preserve competition, while simultaneously fostering innovation, rewarding positive developments, and maximising social welfare.

The study of competition policy lends itself naturally to a law and economics approach as competition law should not be viewed or developed in a vacuum, but must take great care to develop economically sound policies. Although academic research on the benefits and drawbacks of regulating big data through the use of the essential facilities doctrine has been conducted, little to no work has been done on the possibility of applying this concept to creative industries specifically.

This article examines the use and growth of big data in creative industries and the intellectual property rights applicable to computer-generated works. It further addresses the possibility of designating big data as an essential facility in creative industries. In this, the article examines the benefits to innovation and creativity of regulating the use of big data in such industries and the negative consequences of imposing a duty to deal including

[2] Kal Raustiala and Christopher Jon Sprigman, 'The Second Digital Disruption: Streaming & the Dawn of Data-Driven Creativity' (2019) 94 (6) New York University Law Review 1555, 1597f.
[3] Shane Atchison and Jason Burby, 'Big data and creativity: What we can learn from 'House of Cards'' (The Next Web, 20 March 2016) <https://thenextweb.com/insider/2016/03/20/data-inspires-creativity/> accessed 18 May 2019.

disincentivising innovation and entrepreneurship, and the dangers posed by overregulation in Schumpeterian markets where competition is for the market itself, rather than for a share.

Although creativity is a key feature in many industries which are acutely feeling the effects of this disruption,[4] due to the scope of this article, the focus will be solely on markets for music, film, and television.

B. COMPETITION LAW AND BIG DATA

1. An Overview of Big Data

Big data plays a fundamental role in the functioning of emerging industries. This is largely what sets new, data reliant 'tech' industries apart from others. Big data 'can be loosely described as "data that exceeds the processing capacity of conventional database systems"'.[5] This term refers both to the data itself and 'all the methods and processes that result in information that support the analyses of science and business decision-making'.[6] This creates difficulties in assessing ownership rights over big data as there is contention regarding whether the raw data or the outputs and analysis of this data should be subject to competition controls. It can be further argued that consumers whose data is used in such analysis should enjoy certain rights over the appropriation of their data and the products derived from this. Big data undoubtedly plays a substantial role in the success of many undertakings. However, it can be difficult to discern whether this success and market power is a result of efficiency or anticompetitive behaviour.[7]

Big data is most commonly characterised by the four V's, namely:

1. 'Volume – the sheer amount of data available;
2. Velocity – the rate at which new data are generated and analysed;
3. Variety – the differences in types of data used and the increasing complexity of data analysis;
4. Variability – the different interpretations of data analysis and the extent to which data is consolidated, cleaned and consistent.'[8]

[4] Raustiala and Sprigman (n 2) 1601.
[5] Marcelo Corrales, Mark Fenwick and Nikolaus Forgó (eds), *New Technology, Big Data and the Law* (Springer 2017) 194.
[6] ibid.
[7] Giovanna Massarotto, 'From Standard Oil to Google: How the Role of Antitrust Law Has Changed' (2018) 41 (3) World Competition 395, 408.
[8] Ritam Arora, 'E-commerce, (Big) Data and Competition Law- Need for New Framework for the Application of Competition Law to Online Platforms' (Economic Analysis and Competition Law Enforcement International Workshop, Moscow, May 2018) <https://economics.hse.ru/data/2018/05/27/1149475986/Ritam%20Arora.pdf> accessed 30 April 2019, part V.

In essence, big data is used by collecting data regarding individual consumer preferences, characteristics, identifiers, and behaviour in huge quantities. This data is then processed, frequently using a combination of human and algorithmic analysis. The patterns and information gleaned can offer very strong indications regarding future purchasing or consumption patterns of consumers. This information is then used to shape undertakings' decisions, allowing greater accuracy in predicting consumer behaviour, thereby strongly increasing the likelihood that a product will be successful when brought to market.

Due to the unusual nature of technology-dominated industries such as social media and content streaming services markets, it can be difficult to conclusively ascertain consumer welfare effects with traditional approaches. This occurs because price often does not play a substantial role, creating difficulties in using traditional methods of determining market power and product substitutability such as the SSNIP test.[9]

2. The Big Data Relevant Market

In assessing a possible competition law infringement, determining market power is essential. To do so, the relevant market, in which the market power in question may exist, must first be defined.[10] This is not always a straightforward exercise; problems arise where the market is defined too narrowly or broadly, or when all relevant factors are not adequately taken into consideration.[11] The difficulties in correctly defining the relevant market can be compounded in the case of online platforms, whereby it may be necessary to define the relevant market by different means than in the case of traditional markets as online platforms frequently exhibit different characteristics.[12]

Defining the relevant market for big data will facilitate a better understanding of the market power of undertakings operating within these market structures. Big data can play a significant role in affecting market power, particularly when all competitors do not have access to the data, as arises in the case of traditional film or music studios competing with streaming services.[13] This article will focus on the market for creative industries, in which big data is

[9] The SSNIP, or hypothetical monopolist test, is used to define markets by examining the effect of a small, but significant, non-transitory increase in price on product substitutability. Malcolm B Coate and Jeffrey H Fischer, 'A Practical Guide to the Hypothetical Monopolist Test for Market Definition' (2008) 4 (4) Journal of Competition Law & Economics 1031.

[10] Failure to define the relevant market by the European Commission led to its decision being overturned in *Continental Can Co Inc* JO [1972] L 7/25, [1972] CMLR D11.

[11] For a more detailed overview, see: Roger Van den Bergh, *Comparative Competition Law and Economics* (Edward Elgar Publishing 2017) 134 on Case 27/76 *United Brands v Commission* [1978] ECR 207.

[12] Arora (n 8) part II.

[13] Vicente Bagnoli, 'The Big Data Relevant Market' (2016) 23 Concorrenza e Mercato <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3064792> accessed 19 May 2019, 17.

frequently used, rather than the market for big data as a whole. Creative industries and markets for streaming services operate differently from other markets with substantial big data inputs such as social media platforms. In markets for social media, consumers usually pay no fee and the platforms earn revenue from their data and targeted advertising. This causes problems when applying traditional tools for defining a market, such as the SSNIP or 'hypothetical monopolist' test. In contrast with social media platforms, customers of streaming services usually pay a fee (or in the case of certain service models such as Spotify, can accept ads in exchange for streaming music, in so-called 'freemium models').

Markets with high levels of data input are often characterised by two-sided markets. In essence, a two-sided or multi-sided market arises when an undertaking is selling a good or service to traditional consumers, being one market, and further selling information generated from these consumers to third-parties, either in the form of pure data or through targeted advertising sales. This will 'have a direct impact on market definition.'[14] Traditional tools used to define markets will need to be adapted given the feedback effect between both sides of the platforms. In the digital economy, information gained in one market may then be used to compete in another market, further complicating the market definition exercise.[15] This also applies in creative industries, whereby streaming services use analysis of consumption patterns gained on their streaming platform to compete in the market for creative works, which also exists beyond a single streaming platform. It has therefore been proposed, that the relevant market for big data itself be defined according to its stages or submarkets, being: capture, storage and analytics.[16]

A full original analysis and assessment of what should constitute the relevant market for creative industries, within the scope of video and music production, is unfortunately outside the scope of this article. This article will follow the approach of Raustiala and Sprigman: the relevant market consisting of all film and television producers in the market for video and all music producers in the market for music. This includes traditional content producers and sellers, in addition to newer models, in which consumers merely gain access to the works while subscribed to the service but do not obtain any ownership rights over a copy.[17]

C. THE USE OF BIG DATA IN CREATIVE INDUSTRIES

[14] Arora (n 8) part IV.
[15] Bagnoli (n 13) 13f.
[16] ibid 29.
[17] Raustiala and Sprigman (n 2).

Creative outputs, such as video and music are characterised by high fixed costs and low marginal costs.[18] Due to this cost structure, IPRs have been granted to creators to enable the profitable production of creative works, by pricing above marginal cost thereby enabling the recoupment of fixed costs. This legal framework, combined with technological protections has traditionally been effective in incentivising the development of creative works.[19] However, this market structure has been subject to immense levels of disruption in the past two decades.

In 1999, the digital file-sharing service Napster was established. This led to rampant piracy across the music industry and, in the intervening years, revenues for recording companies dropped by nearly 67%.[20] This development subsequently gave rise to the proliferation of unlicensed file-sharing services, including the ability for users to share video. While revenues have sharply decreased, the cost of producing music has also been dramatically reduced, largely due to technological improvements, thus, the revenues needed to recoup the fixed cost of production have also decreased. However, this change in cost structures did not apply to video production which remained a capital-intensive output. Digital rights management and regulation in the EU and US attempted to address issues of piracy, prohibiting *inter alia* the reverse engineering of encryption software protecting copyrighted materials.[21] Services such as Netflix for streaming video on demand (SVOD) and Spotify for music streaming, offering an easy to use and relatively cheap method of consuming large quantities of content, have been instrumental in reducing piracy across creative industries.

Although piracy has been reduced, producers receive substantially less revenue under streaming models as compared with traditional CD or VHS/DVD sales models. This reduction in revenue can be partially offset by the use of data-driven creativity. Using data to inform creativity sharply reduces the risk of failure, increasing the relative proportion of successful works. As a result, those with access to big data no longer incur the traditional quantum of costs associated with a substantial number of failed productions, increasing the profitability of producing creative works, and creating a chasm in creative industries between traditional models of creativity and data-driven creativity.

[18] Joel Waldfogel, 'Copyright Protection, Technological Change and the Quality of New Products: Evidence from Recorded Music since Napster' (2012) 55 Journal of Law and Economics 715, 715.
[19] ibid.
[20] Raustiala and Sprigman (n 2) 1557.
[21] US legislation included (preceding Napster), the Digital Millennium Copyright Act 1998. In the EU, protections were granted through Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society [2001] OJ L167/10 and Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC [2019] OJ L130/92.

1. The Growth of Data-Driven Creativity

Data-driven creativity is becoming increasingly prevalent across many creative industries, in addition to film, television and music. It can be argued that big data has been the biggest factor in reducing the cost of production of creative outputs, both in video and music production. Data has always been utilised by producers to a certain extent, following models which have previously successful, taking consumer preferences and reviews into consideration and looking at popular trends in music, film, and television shows. However, the increase in vast quantities of cheap computing power was instrumental in bringing about collection and analysis of big data.[22]

Big data takes these insights to a far more reliable and detailed level. Big data enables producers such as Netflix and Spotify with access to huge quantities of consumer information to fine tune their productions to suit consumer tastes. Far beyond merely following the trend of successful genres such as superhero movies, big data allows producers such as Netflix to harvest consumer information, including when consumers pause, rewind or fast-forward a video, which day of the week certain videos are steamed, which videos are streamed on certain devices, what percentage of viewers complete a film or television show, consumer scrolling behaviour, and many other metrics.[23] In a single day, Netflix records hundreds of millions of these data points.[24] Netflix then aggregates this data, putting it through analytical algorithms to generate detailed reports on consumer behaviour and preferences. This data allows Netflix to produce content, with greater confidence in its likelihood of success. In a departure from traditional television models, Netflix does not produce pilot episodes to measure the likely consumer reception. Netflix's confidence and reliance on data analytics allows it to produce an entire season or purchase a show 'before a single frame has been filmed'.[25]

The use of big data in shaping production has given rise to mammoth levels of disruption in the video and music industries. In 2018, Netflix produced 82 feature films, with Warner Brothers, the largest studio in Hollywood, in comparison producing just 23 feature films for cinemas.[26] It is estimated that by 2022, Netflix could be spending $22.4 billion on content annually, close to the 'total currently spent on entertainment by all America's networks

[22] Raustiala and Sprigman (n 2) 1600.
[23] ibid 33.
[24] Andrew Leonard, 'How Netflix is turning viewers into puppets' (*salon*, 1 February 2013) <https://www.salon.com/2013/02/01/how_netflix_is_turning_viewers_into_puppets/> accessed 18 May 2019, 1.
[25] Raustiala and Sprigman (n 2) 1589.
[26] 'The television will be revolutionised: Netflix is moving television beyond time-slots and national markets' *The Economist* (30 June 2018) <https://www.economist.com/briefing/2018/06/30/netflix-is-moving-television-beyond-time-slots-and-national-markets> accessed 6 August 2019.

and cable companies'.[27] Through the use of big data, Netflix is rapidly gaining market power and shaping how video is produced and consumed. This disruption is further aided by unlimited access to content not reliant on time-slots, combined with cheap, high-quality internet access, with Netflix streaming making up 11% of the total volume of internet traffic in 2020.[28] Freedom from time-slot constraints gives Netflix a further advantage over traditional broadcast television: unsuccessful shows on a SVOD service 'do not impose the opportunity costs of a poor performer in prime-time'.[29] Netflix was valued at $194 billion in 2020, more than even Disney.[30] Data-driven creativity and SVOD is rapidly becoming the market model for video production and consumption and traditional producers are struggling to keep pace.

In an attempt to compete with producers such as Netflix, AT&T acquired Time Warner in an $85 billion deal.[31] Subsequently, the former CEO of Time Warner acknowledged that the direct connection of Netflix to its consumers gives it a huge advantage.[32] AT&T, owners of digital cable and satellite networks sought to combine its resources with Time Warner, a content producer. When this merger was contested, citing competition concerns, Time Warner contended that it is at a competitive disadvantage when compared to its rivals, such as Netflix and Google, given their combined role as a content producer and digital distribution platform.[33] Time Warner argued that 'the data gap also gives online video programmers a competitive advantage in the production and aggregation of content based on extensive data about the content preferences of their viewers',[34] and further contended that the suit was politically motivated.[35] The Court found in favour of the merger, holding that 'traditional programmers

[27] ibid.
[28] Over the sample period in 2020, Netflix comprised 11% of global internet traffic, a figure which likely would have been higher had Netflix not reduced the default resolution of its streaming. See Sandvine, 'COVID-19 Global Internet Phenomena Report' (7 May 2020) 7.
[29] The Economist (n 26) 4.
[30] Ariel Shapiro, 'Netflix Stock Hits Record High, Is Now Worth More Than Disney' *Forbes* (16 April 2020) <https://www.forbes.com/sites/arielshapiro/2020/04/16/netflix-stock-hits-record-high-is-now-worth-more-than-disney/?sh=2cab9fe64b26> accessed 5 April 2021.
[31] Brian Fung, '$463 million vs. 45 cents: The war of numbers in the court battle over AT&T's mega-merger' *The Washington Post* (16 March 2018) <https://www.washingtonpost.com/business/economy/the-atandt-trial-could-curb-mega-mergers--or-weaken-regulators-for-decades/2018/03/15/7906106a-279a-11e8-874b-d517e912f125_story html?utm_term=.21e759a7ef03> accessed 4 August 2019, 1.
[32] The Economist (n 26) 2.
[33] Raustiala and Sprigman (n 2) 1559.
[34] Pretrial Brief of Defendants at 8, *United States v AT&T Inc., (United States v AT&T)* 290 F. Supp. 3d 1 (2018) No. 17-2511.
[35] Donald Trump is famously opposed to CNN News, a subsidiary of Time Warner and prior to his election stated he would oppose the AT&T/Time Warner merger on concentration concerns, leading to post-election allegations of interference in the Justice Department's handling of the merger. See Brian Fung and Tony Romm, 'AT&T and the government face off in court today. Here's everything you need to know.' *The Washington Post* (19 March 2018) <https://www.washingtonpost.com/news/the-switch/wp/2018/03/19/att-and-the-government-face-off-in-court-today-heres-everything-you-need-to-know/?noredirect=on&utm_term=.d5b89db8132e> accessed 4 August 2019, 4; Fung (n 31) 4.

and distributors are experiencing increased competition from innovative, over-the-top content services'.[36] The Court recognised the tremendous market power that big data gives to content creators when compared to traditional models whereby creators have little to no access to the preferences of their consumer base.

Although data-driven creativity is currently more prevalent in markets for video, it is gaining traction in music production. Similarly, to video producers, music producers with access to the consumer information held by streaming services can enjoy a substantial competitive advantage over their rivals. Spotify, a leader and early pioneer of music streaming services, has approximately 345 million monthly users, 155 million of whom are premium subscribers, with the remainder using an ad supported 'freemium' model.[37] Spotify is using the data it records from these subscribers and using AI advances to develop content.[38] Spotify is hopeful that this technology can give rise to a song writing partner for human artists.[39] Given the wealth of information at Spotify's disposal, it is foreseeable that algorithms will eventually become advanced enough to independently generate music outside of the ambient/mood genre. The information Spotify obtains from consumers functions as a training tool for machine learning.[40] Such developments would make the cost of production, beyond developing the necessary algorithm, virtually nothing. Outside the realm of strict data-driven creativity, Spotify utilises consumer preferences to generate personalised recommendations for its users. In doing so, Spotify can become a platform where users can discover music they are likely to enjoy, further increasing the attractiveness of the platform. Spotify may seek to leverage its informational advantage to move from being a pure streaming service to producing its own content, following the model of Netflix as a creator and distributor, giving it a competitive advantage over rivals.[41] In developing original content, as Netflix and Amazon prime have done, Spotify will no longer be constrained by content owners withholding access. Moreover, Spotify can use its access to consumer data to help drive creative decisions, creating music with a high probability of commercial success, thereby starkly reducing the potential risk of failure, thus decreasing the cost of production.[42]

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[36] *United States v AT&T* (n 34).
[37] Spotify 2020 Q4 Earnings Release Shareholder Letter (3 February 2021) <https://s22.q4cdn.com/540910603/files/doc_financials/2020/q4/Shareholder-Letter-Q4-2020_FINAL.pdf> accessed 5 April 2021.
[38] Raustiala and Sprigman (n 2) 1597.
[39] ibid 1598.
[40] ibid.
[41] ibid 1597.
[42] ibid.

2. Intellectual Property Rights over Computer Generated Works

The proliferation of data-driven creativity gives rise to questions regarding ownership and IPRs. Intellectual property (IP) law exists in practice, to enable producers to recoup their fixed costs of production and risk of failure by giving them the exclusive right to sell or licence the product, thereby allowing products to be sold at a price above the marginal cost of production.[43] Through this mechanism, creators are incentivised to produce creative outputs, which the law believes would otherwise not be produced. This framework has been developed with a strong focus on economic incentives, rather than the morality of copyright.[44] However, this is not how IPRs are generally perceived by the public. IP laws are shrouded in notions of moral rights of authors, and the Promethean view of the creator as a 'lone genius'.[45] The popular perception is that IP laws exist to prevent plagiarism; the so-called 'plagiarism fallacy'.[46] In addition, copyright law in Europe has been developed in a paternalistic manner whereby authors are granted inalienable moral rights, with the right to earn royalties upon resale of their original creative works, more commonly known as *droit de suite.*[47] Under the traditional model of creativity, without any computational involvement, the distinction between economic incentives, paternalistic concerns and public perception had little impact on the regulation of intellectual works. It could however be posited that changing models of producing creative works and the increased use of computation creativity could give rise to changing attitudes towards IPRs.[48] Changing cost structures of IP production also leads to questions regarding the necessity of IPRs. If there is an intrinsic motivation to create and the cost of creation has been dramatically decreased, given the goal of incentivising creation of IP, there may be less of a need for IPRs across a large range of industries.[49]

The incentive/access paradigm as it relates to computational creativity is central to the development of IPRs. Regulators seek to develop IP laws which are balanced insofar as they give creators sufficient incentive to produce works while allowing consumers access to the products without giving producers excessively strong rights. Currently, in the EU and US,

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[43] See William Landes and Richard Posner, *The Economic Structure of Intellectual Property Law* (Harvard University Press 2003); see also Richard Posner, 'Intellectual Property: The Law and Economics Approach' (2005) 19 (2) Journal of Economic Perspectives 57.
[44] Gregory N. Mandel, 'Intellectual Property Law's Plagiarism Fallacy' (2015) Brigham Young University Law Review 915, 925 ff.
[45] Raustiala and Sprigman (n 2) 1603.
[46] Gregory N. Mandel, 'What is IP For? Experiments in Lay and Expert Perceptions' (2016) 90 St. John's Law Review 659, 667.
[47] Directive 2001/84/EC of the European Parliament and of the Council of 27 September 2001 on the resale right for the benefit of the author of an original work of art [2001] OJ L272/32.
[48] Raustiala and Sprigman (n 2) 1617.
[49] Mark Lemley, 'IP in a World Without Scarcity' (2015) 90 (2) New York University Law Review 460, 463.

copyright lasts for the lifetime of the author plus 70 years thereafter, and all signatories to the Berne Convention are required to grant authors a minimum of 50 years posthumous protection.[50] Where there are high levels of data involvement, or works are entirely computer generated, regulators may seek to restrict the term of copyright granted to such works, given their increased likelihood of success and the decreased fixed costs involved, beyond the initial development of the algorithm. Such determinations become increasingly difficult where a work is a result of the work of data and the human intellect. If data-driven creations were to be granted a shorter copyright, what levels of algorithmic involvement would constitute a computational product? Consideration must also be given to the tremendous skill and creativity which can be involved in developing an algorithm with such capabilities. Although different to traditional ideas of a creative work, from an incentives perspective, software code is no less deserving of copyright protection than any other creative output.

Finally, data-driven creativity gives rise to questions of authorship and ownership. Where huge quantities of consumer data are used to feed an algorithm which then produces a creative output, should those very consumers also enjoy some level of ownership over the output? From a consumer welfare standpoint, it would appear inefficient to grant producers who use consumer data the ability to then charge consumers for that product in the same manner as any other creative output, while also enjoying the same copyright term. Where there are high levels of data involvement, should society enjoy some of the benefits of the product, perhaps through a higher tax on algorithmic creations? When discussing such issues, the question of determining and assessing levels of algorithmic involvement re-emerge, rendering such discussions largely irresolvable. While these remain largely theoretical concerns, producers of such works will likely face increasing scrutiny and regulation in the coming years, both regarding their data collection practices and what that same data is used for.

D. THE ESSENTIAL FACILITIES DOCTRINE AND INTELLECTUAL PROPERTY RIGHTS

Barriers to entry play a central role in determining whether a market is competitive. Where a market appears to be otherwise competitive, high barriers to entry or exit can prevent competition, allowing incumbents high levels of market power. Barriers to entry exist in myriad forms, from high sunk costs to licencing restrictions. The inability for potential competitors to

[50] Directive 2006/116/EC of the European Parliament and of the Council of 12 December 2006 on the term of protection of copyright and certain related rights (codified version) [2006] OJ L372/12 Article 1; Copyright Act of 1976, 17 USC § 302 (2012); Berne Convention for the Protection of Literary and Artistic Works 1886.

gain access to an input essential to compete in the market will constrain their ability to enter and compete in the market, constituting a classic barrier to entry.

The essential facilities doctrine was created to remedy this barrier to entry. The essential facilities doctrine enables competition in markets characterised by indispensable inputs by providing a means of access to this facility for competitors. To varying degrees, the essential facilities doctrine, also referred to as a duty to deal, has been accepted in EU and US jurisprudence. The test for establishing a duty to deal in the EU was set out in *Oscar Bronner* and the requirements are as follows:[51]

i) 'The refusal [is] likely to eliminate all competition in the downstream market;
ii) the refusal [is] not capable of being justified; and
iii) access to the facility [is] indispensable to the competitor's business, there being no actual or potential substitutes.'[52]

In essence, the essential facilities doctrine is used to prevent dominant undertakings in a market, with control over a facility essential to compete in that market, from denying potential competitors access to that facility in order to concentrate their control over the market.[53] Traditionally, many cases of the essential facilities doctrine in the EU have involved infrastructure in the hands of former state monopolies, such as harbours, ports, tunnels, and other infrastructure essential to downstream competition.[54] It can be further posited, that a duty to deal is more likely to be imposed where the facility or input in question was built or developed with the use of state funds. Nonetheless, considerations of IPRs have frequently come within the scope of the essential facilities doctrine. The essential facilities doctrine falls under Article 102 of the Treaty on the Functioning of the European Union (TFEU) which regulates the abuse of dominance. The European Commission Guidance on Article 102 enforcement priorities gives a greater insight into the nuances of the essential facilities doctrine and its applicability.[55]

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[51] Per the ECJ in Case C-7/97 *Bronner (Oscar) GmbH & Co KG v Mediaprint Zeitungs- und Zeitschriftenverlag GmbH & Co KG (Oscar Bronner)* [1998] ECR I-7791.
[52] Paul Lugard and Lee Roach, 'The Era of "Big Data" and EU/U.S. Divergence for Refusals to Deal' (2017) 31 (2) Antitrust 58, 60.
[53] Maxwell Meadows, 'The Essential Facilities Doctrine in Information Economies: Illustrating Why the Antitrust Duty to Deal is Still Necessary in the New Economy' (2015) 25 Fordham Intellectual Property, Media & Entertainment Law Journal 795, 805.
[54] *Sealink/B&I – Holyhead: Interim measures* (Case IV/34.174) Commission Decision (11 June 1992) [1992] 5 CMLR 255; *Sea Containers v Stena Sealink – Interim measures* (Case IV/34.689) Commission Decision 94/19/EC [1993] OJ L15/9; *Eurotunnel* (Case IV/32.490) Commission Decision 94/894/EC [1994] OJ L354/66.
[55] Guidance on the Commission's Enforcement Priorities in Applying Article 82 of the EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings 2009 OJ C45/7.

EU competition law starts 'from the general rule that a duty to deal with a competitor should be rarely imposed to dominant undertakings'.[56] With this principle in mind, IP holders have no obligation to licence their IPRs.[57] This rule exists in the EU for four main reasons: i) undertakings have the right to choose with whom they wish to trade; ii) compulsory licencing may affect incentives to innovate, thereby harming consumer welfare; iii) a duty to deal can give rise to overly onerous and paternalistic involvement of competition authorities and courts in the workings of the economy, potentially causing long-term harm to a free market economy; and iv) the generally accepted position is that Coasean bargaining for licencing IPRs results in a Pareto efficient outcome.[58] Compulsory licencing of IPRs can 'reduce efficiency by altering the incentives of IP owners: [compulsion] to licence on equal or fair terms reduces the incentive to licence at all'.[59]

Compulsory licencing of IPRs under Article 102 TFEU has been a key issue in cases before the Court of Justice of the European Union (CJEU), including *Volvo v Veng*, *Magill* and *IMS Health*.[60] In *Volvo*, it was held that the holder of an IPR enjoys the right to prevent the manufacture or sale of that IP, without this constituting an abuse of dominance under Article 102 TFEU.[61] However 'the Court did not go so far as to create an irrebuttable presumption for the exercise of IP rights'.[62] This principle was then further developed in *Magill*, where the CJEU recognised that 'the exercise of an exclusive right by the intellectual property owner may, in "exceptional circumstances", involve abusive conduct'.[63]

Established under the 'new product rule', 'exceptional circumstances consist of the following: (i) access is indispensable, (ii) the refusal to licence prevented the appearance of a new product for which there was potential consumer demand, (iii) there was no justification for such refusal, (iv) the refusal to licence excluded all competition on the secondary market.'[64]

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[56] Ioannis Lianos, 'Competition Law and Intellectual Property Rights: Promoting Innovation' 84 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2863814> accessed 21 November 2021. This paper was originally published on SSRN as pre-published version of Chapter 13 of Ioannis Lianos, Valentine Korah and Paolo Siciliani, *Competition Law: Analysis, Cases and Materials* (Oxford University Press 2019), however it was ultimately not included in the final publication.
[57] ibid.
[58] ibid.
[59] ibid 85.
[60] Case C-238/87 *Volvo v Veng* [1988] ECR 6211; Joined Cases C-241/91 P and C-242/91 P *Radio Telefis Eireann v Commission (Magill)* [1995] ECR I-743; Case C-418/01 *IMS Health GmbH & Co OHG v NDC Health GmbH & Co KG (IMS v NDC)* [2004] ECR I-5039.
[61] *Volvo v Veng* (n 60).
[62] Lianos (n 56) 88.
[63] ibid 89; *Magill* (n 60).
[64] Lianos (n 56) 91f.

In this, the court recognised the importance of protecting and fostering innovation, which was stifled by a refusal to licence an IPR.

The facts in *Magill* are similar to those arising in imposing a duty to licence access to big data in creative industries.[65] In the case in question, the IP was protected by way of a *sui generis* database right, essentially granting the holder 'sweat of the brow' protection on the basis of investments made in compiling that database, in order to prevent free riding.[66] Stronger copyright protections exist where 'by reason of the selection or arrangement of their contents constitute the author's own intellectual creation'.[67] Such protection is unlikely to apply in the instance of big data merely gathered from consumer behaviour. *Sui generis* database protection is relatively weak, but the algorithms used to analyse the data held in such a database are protected by substantially stronger copyright laws. *Sui generis* protection can be problematic 'where a database is the only possible source of the data contained therein, such as telephone directories' etc, and may give rise to 'an absolute downstream information monopoly in derivative information products and services'.[68]

The principle of a duty to licence was further explored in *IMS v NDC*.[69] It is worth setting out the reasoning of the court in this instance, that, following *Oscar Bronner*[70]

> 'in order to determine whether a product or service is indispensable for enabling an undertaking to carry on business in a particular market, *it must be determined whether there are products or services which constitute alternative solutions, even if they are less advantageous,* and whether there are technical, legal or economic obstacles capable of making it impossible or at least unreasonably difficult for any undertaking seeking to operate in the market to create, possibly in cooperation with other operators, the alternative products or services'.[71]

Following the exceptional circumstances rationale, the CJEU recognises that a duty to deal should not be lightly imposed on IP rightsholders. A claimant cannot merely contend that it would be more profitable or easier to use the facility in question, but rather must show that the facility is indispensable and without substitute. The CJEU further notes that economic

[65] *Magill* (n 60).
[66] Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases [1996] OJ L77/20 (Database Directive).
[67] ibid.
[68] P Bernt Hugenholtz 'Abuse of Database Right: Sole-Source Information Banks under the EU Database Directive' in François Lévêque and Howard Shelanski (eds), *Antitrust, Patents and Copyright - EU and US Perspectives* (Edward Elgar Publishing 2005) 203.
[69] *IMS v NDC* (n 60).
[70] *Oscar Bronner* (n 51).
[71] *IMS v NDC* (n 60) para 28 (emphasis added).

obstacles must be such that 'the creation of those products or services is not economically viable for production *on a scale comparable to that of the undertaking which controls the existing product or service*'.[72] This establishes clearly that a duty to deal will not imposed purely on the basis that the competitor cannot replicate the facility in question due to the scale of the competitor.

This cuts to the core of the issue at the centre of this article: whether competitors in creative industries would be capable of competing with dominant firms using big data to shape production, without access to this data, by way of other products or services.

The case law of the CJEU suggests that regulating big data in creative industries by way of instituting a duty to deal would not be an entirely novel decision. While decisions regarding this particular aspect of IPRs have, as of yet, not been taken, there is little to suggest that big data would function differently or be afforded different treatment in any material way to that of any other IPR before the Court, privacy considerations notwithstanding.

Competition must be fostered in the market for music streaming services and SVOD, and IPRs are crucial to the existence of these very markets. In essence, IPRs confer a legal monopoly to the holder over the creation in question, be it the final product or the algorithm used to inform its development. IPRs are crucial in incentivising innovation by enabling investors to recoup their fixed cost of development. To this end, it is imperative to recognise the importance of, and protect IPRs within the scope of competition policy and regulation, while striking a balance enabling undertakings to compete in the market.

A duty to deal in the context of big data in creative industries could incentivise competitors to free ride on the efforts of those who have invested in developing this technology. Implementing the essential facilities doctrine can slow down the rate of innovation and disruption as the algorithms of market incumbents can simply be used, rather than spending money on innovation. To this end, great care in considering the potential negative externalities of imposing a duty to deal should be taken, prior to any regulation. These issues will be discussed in greater detail in Part E, 2.

E. BIG DATA AS AN ESSENTIAL FACILITY IN CREATIVE INDUSTRIES

As discussed in Part C, big data is becoming increasingly important in creative industries. Big data functions as an essential facility insofar as network effects and exclusionary conduct work to such an extent as to preclude others from entering the market. When considering designating

[72] ibid.

big data as an essential facility, thereby imposing a duty to licence on IPR holders, consideration must be afforded to the various stages of data collection and analytics this might encompass. There are three discrete stages, or products which comprise big data: i) raw data, ii) algorithms and computer programmes used to process this data, and iii) analytics and conclusions drawn from the final outputs. It could be argued that the raw data would be most appropriate to designate an essential facility when compared to the algorithms or analytics as the latter enjoys greater IP protections. Implementing a duty to licence algorithms would be more likely to induce free riding as competitors would have fewer incentives to develop their own analytical skills and algorithms. Without processing ability, raw data is itself virtually worthless, as it is the insights it generates which gives it its value. In addition, there is a substantial amount of creativity, innovation, and investment in the process of generating these analytical tools which should be protected by IPRs and not available for widespread exploitation by those who have not invested in them, as this would leave investors unable to recoup their costs, leading to dynamic inefficiencies.

Despite the rationale of imposing a duty to licence only the database itself, rather than the algorithms used for analysis, granting access only to the database could arguably be redundant. Writing algorithms involves substantial sunk costs which potential competitors may be unable to match, given their size. Therefore, it could be posited that algorithms and computer programmes used for processing would need to be incorporated into a duty to licence to effectively foster competition. This notwithstanding, a duty to licence software would give rise to a not insubstantial interference in the IPRs of undertakings.

Following *Bronner* and *IMS Health* as discussed above, a duty to deal should only be imposed where it would not be economically viable or possible to develop the facility in question, if the competitor were *operating on the same scale* as the dominant undertaking with control of the facility.[73] This criterion undercuts any real prospect of the CJEU supporting a widespread duty to licence access to software on the basis of scale. Furthermore, at scale, competitors would be capable of developing the software and algorithms necessary to analyse the data in question. It follows therefore, if seeking to effect real change at an EU level, that any duty to deal should solely concern the raw data, and not the software or resulting analysis. While this requirement would remove many small-scale undertakings from the scope of such regulation, it remains extremely unlikely that the CJEU would overturn its requirement of scale,

[73] *Oscar Bronner* (n 51); *IMS v NDC* (n 60).

without which any undertakings of substantial size would be vulnerable to claims of a duty to deal.

The scale issue must also be viewed in context: production of creative works, particularly in respect of video production is capital intensive. Regardless of the quantity of data used to shape the creative process, production remains capital intensive. While there will always be 'indie' producers that will continue to produce content with relatively little money, by and large, video producers, even those producing on a small scale, will need to be backed by a relatively large amount of capital. In such instances, it may be argued that producers with access to funding necessary to produce, will also have access to funding necessary to develop or licence algorithms needed to analyse the raw data, given the increase in the expected market success when using data to shape production. Where a duty to licence raw data is imposed, a market for analytical algorithms and software is likely to grow in response, thereby dramatically decreasing the cost of obtaining algorithms for individual producers, given the same cost structure applicable to all IP. It could be argued that the 'scale criterion' in *IMS Health*[74] could be used as an argument in favour of a merger by undertakings in the EU seeking to merge to gain the necessary scale to develop such facilities, such as in the US AT&T/Time Warner merger.[75] Thus, for the purposes of analysis, this article will proceed henceforth from the position that a duty to deal would be in respect of the raw data, rather than the algorithms or final analysis.

Thus far, this article has focused on the rationale for imposing a duty to licence access to data on dominant undertakings in creative industries. With this in mind, this article will now more closely consider the influence which market structures can have on the indispensability of an input and the negative externalities which could arise were a duty to deal imposed.

1. Factors Influencing the Indispensability of Big Data as an Input

Big data is different from other essential inputs in certain respects. Nonetheless many of the arguments applicable to the essential facilities doctrine more broadly still apply with regard to big data. The structure of a market can have a substantial impact on whether a market is competitive, thereby influencing whether a facility is truly indispensable to compete. As previously mentioned, traditionally, inputs which have been designated as essential are most commonly infrastructure and similar facilities, although, as discussed, IPRs have often been the subject of consideration under a duty to deal.

[74] *IMS v NDC* (n 60).
[75] *United States v AT&T* (n 34).

As discussed briefly in Part D, essential facilities can function as a barrier to entry, constraining competition. Beyond access to the input in question, barriers to entry can exist in myriad forms. The high sunk costs characteristic of the production of music and particularly video can create a further barrier to entry for those without considerable funding on which to rely, or on competitors who do not seek to enter the market at scale.

Non-IP goods are frequently, if not always, rival, giving controllers an incentive to retain use for their own purposes rather than licencing. In contrast, big data is non-rival in its consumption, creating an incentive for owners to licence the data, particularly to undertakings operating in a different market. Where a market is not constrained by its structures and is freely competitive, oligopolistic undertakings may be more incentivised to licence access to IP to competitors in the same market, given the potential revenue involved and the likelihood that if they do not licence, another undertaking with possession of the input is likely to do so. Market structures can greatly influence these incentives. If a dominant undertaking with control over an input necessary to compete also enjoys scale efficiencies and a first mover advantage, there is no incentive to licence as this will merely serve to give rise to competitive pricing in the industry in question, thereby making the dominant undertaking incapable of charging monopoly prices. A plethora of factors will shape a market, its competitiveness and the inputs necessary to compete in that market. In the context of creative industries and big data, two of the most significant factors are network and tipping effects. The impact that the first mover advantage and networks and tipping effects have on the indispensability of big data in creative industries will be discussed in detail below.

a) First Mover Advantages

'A first mover advantage can be simply defined as a firm's ability to be better off than its competitors as a result of being first to market in a new product category.'[76] In essence, this means that in some industries, particularly in Schumpeterian markets (discussed in detail below), the undertaking which builds market share fastest is awarded, rather than the undertaking with the better product.[77] While it is too early to conclusively state, as these markets are relatively new and the competition for the market is still ongoing, markets for streaming services have many of the characteristics of Schumpeterian markets. In such markets, first mover advantages combined with network and tipping effects, can create a

[76] Fernando Suarez and Gianvito Lanzolla, 'The Half-Truth of First-Mover Advantage' (2005) 83 (4) Harvard Business Review 121, 122.

[77] Joshua S Gans, 'Economics of Innovation' in Roger D Blair and D Daniel Sokol (eds), *The Cambridge Handbook of Antitrust, Intellectual Property and High Tech* (Cambridge University Press 2017) 4.

dominant or monopolistic market share with which it is difficult to compete. Access to big data gives first movers a substantial edge over later entrants. The data enables the incumbent to remain ahead of potential competitors, allowing the first mover to become entrenched. Control of this data enables the holder to foreclose access to downstream markets, being, in this instance, the markets for video and music. As a result of early access to consumer data, undertakings have developed production methods which new entrants cannot compete with. In this way, the first mover advantage has given rise to an indispensable input, in the form of big data.

Netflix, one of the earliest SVOD providers, enjoys a strong first mover advantage with 204 million subscribers worldwide as of Q4 2020, with Prime Video, the second largest, having just 150 million subscribers in comparison, Prime Video being included in an Amazon Prime membership.[78] Netflix operates on the model that 'winner-takes-most': there is a limited quantity of time that consumers can spend watching video, and if Netflix can capture a large percentage of this time by providing entertainment that consumers genuinely enjoy, consumers will have little reason to subscribe to a competing SVOD or traditional cable service.[79] Although heavily in debt and spending far more than it takes in in revenue, if Netflix successfully captures the market for SVOD, it will eventually likely be able to recoup its initial costs and become enormously profitable, with the possibility to increase prices given its market power. Thus, it could be argued that Netflix is currently engaging in a form of predatory pricing.

Raustiala and Sprigman have developed an interesting theory regarding how the market may react to an increase in costs following the successful capture of a market after predatory pricing.[80] They contend that the market may 'self-correct' to competitive prices by way of piracy, if prices are increased by monopolistic undertakings after the market has been successfully captured. Streaming services for music and video are largely responsible for the dramatic decrease in piracy levels which soared with the introduction of Napster and other file sharing platforms. Although digital rights management plays a role in deterring piracy, the introduction of streaming services was far more influential. These services are appealing to consumers because they are 'all you can eat' buffet models, easy to use and most importantly, relatively inexpensive. While there will always be a certain percentage of the population

[78] Omri Wallach, 'Which streaming service has the most subscriptions?' (*World Economic Forum*, 10 March 2021) <https://www.weforum.org/agenda/2021/03/streaming-service-subscriptions-lockdown-demand-netflix-amazon-prime-spotify-disney-plus-apple-music-movie-tv/> accessed 5 April 2021.
[79] *The Economist* (n 26) 3.
[80] Raustiala and Sprigman (n 2) 1612f.

engaged in piracy, most consumers are willing to pay what they consider a reasonable price for such a service. It should be noted that this price may not be sufficient to enable the service to recoup their fixed costs of production. Where prices rise above a certain level, greater numbers of consumers will again resort to piracy to access media. This market dynamic may serve as an effective means of constraining the ability of dominant firms to set prices at a monopoly level. Although the remaining subscribers will pay more individually, the quantity of consumers who unsubscribe may result in an overall decrease in revenue. Given the extremely low marginal cost involved in providing the service to each additional subscriber, streaming services are incentivised to price so as to capture the greatest amount of revenue possible which may involve decreasing price thereby increasing consumer welfare.

The existence of an inherent first mover advantage has not been conclusively accepted by all academics. First movers do not always enjoy an advantage over their subsequent competitors.[81] Suarez and Lanzolla argue that there are factors which can substantially influence the success of a first mover.[82] They contend that the 'faster or more disruptive the evolution of technology, the greater the challenge for any one company to control it'.[83] Gradual development 'provides first movers with the best conditions for creating a dominant position that is long lasting'.[84] It would be difficult to contend that markets for SVOD and music streaming services are developing at a gradual pace. Suarez and Lanzolla argue that in a market characterised by rapid technological change, a first mover would need to be heavily funded in order to remain in the market long enough to become profitable, while keeping progress with technological change and competing with undertakings who enter as lucrative market spaces open up. Dominant players in markets for music and video currently enjoy these characteristics. Both Netflix and Spotify have long operated as loss leaders, with Spotify only posting its first profit in Q4 of 2018 having launched in 2008.[85]

Critics further argue that industries experience high levels of disruption and incumbents or 'first-movers' are always vulnerable to innovative competitors, capable of reshaping the

[81] E.g. a case in point is Xerox which despite being the first mover in markets such as fax machines, personal computing, and photocopying failed to translate that innovation into lasting market power. See Suarez and Lanzolla (n 76) 121.
[82] Ibid 122.
[83] ibid 123.
[84] ibid 124.
[85] Amy X Wang, 'Spotify Turns a Profit for the First Time — and Reveals Its Bigger Ambitions' (*Rolling Stone*, 6 February 2019) <https://www rollingstone.com/music/music-news/spotify-fourth-quarter-profit-790725/> accessed 13 August 2019; Helena Soderpalm and Olaf Swahnberg 'Spotify posts first ever operating profit, but cautious outlook for 2019' (*Reuters*, 6 February 2019) <https://uk.reuters.com/article/us-spotify-tech-results/spotify-posts-first-ever-operating-profit-but-cautious-outlook-for-2019-idUKKCN1PV15L> accessed 13 August 2019.

entire industry by identifying consumer needs overlooked by incumbents. Disruptive innovation can 'destroy existing models and change entire industries'.[86] Netflix itself is an excellent example of this. Before becoming a SVOD service, Netflix offered an in-mail subscription service which competed with the traditional on-demand video rental service operated by the incumbent Blockbuster. Netflix targeted the group of consumers unconcerned with new releases, offering them a less expensive and inferior, but tailored service. Netflix then moved upmarket, catering to mainstream consumers, eventually replacing Blockbuster and reshaping video consumption entirely with its SVOD service and use of data-driven creativity.[87]

b) Network and Tipping Effects

Network and tipping effects are closely related to the first mover advantage. Network effects can accelerate and entrench the first mover effect.[88] 'Network effects occur when a consumer's benefit from a product or service increases with an increase in the number of other users'.[89] In a market characterised by network effects, the greater the market share of the undertaking, the greater its appeal to consumers, creating a feedback loop with an increasing market share. Where content is exclusive to a platform, in markets for film, television, and music streaming services, strong network effects exist between platforms. This is frequently the case for film and television streaming services but less so for music streaming services.

Streaming services such as Netflix and Amazon Prime are increasingly investing in developing original content, exclusive to their platform rather than purchasing the rights to content produced by rival producers. Original content is increasingly becoming a crucial element in attracting subscribers.[90] Consumers value the ability to discuss film and television content with friends and through other online social media platforms, and may feel compelled to watch a film or television show if it is particularly popular among their peers, so as to avoid feeling excluded. This phenomenon creates a very strong network effect between streaming services. These network effects increase the consumer base, and by extension the quantity of consumer data which the undertaking has access to. Increased access to data allows undertakings to fine tune their analytics, further increasing the likelihood of producing

[86] 'Disruptive Innovation: Why Uber isn't disruptive but Netflix is' (*Medium*, 11 September 2018) <https://medium.com/datadriveninvestor/why-uber-isnt-disruptive-but-netflix-is-disruptive-innovation-explained-198d250f4db0> accessed 13 August 2019.
[87] ibid.
[88] Suarez and Lanzolla (n 76) 121.
[89] Arora (n 8) part III.
[90] In 2018, Netflix spent $13 billion on producing original content, with Amazon spending $4.6 billion. See Raustiala and Sprigman (n 2) 1585.

commercially successful content. This cycle increases the importance of access to data in order to compete in the market. As a result, big data eventually becomes indispensable to compete in the markets in question.

Network effects can also give rise to scale efficiencies, further benefitting the undertaking in question. Scale efficiencies are closely related to Schumpeterian markets as discussed in detail above. Scale efficiencies could give rise to the creation of Schumpeterian markets if the efficiencies generated by scale are sufficient enough to give the undertaking in question dominance and eventually monopoly power. In such instances, potential competitors would not be able to compete at a smaller scale, due to their high marginal costs relative to those of the dominant undertaking.

Network effects can lead to a tipping effect in favour of the dominant firm.[91] This tipping effect can cause a further barrier to entry to the market and the dominant player can engage in predatory pricing to retain control of the market. Tipping occurs when 'the joint existence of two incompatible products may be unstable, with the possible consequence that a single product and standard will dominate.'[92] There exists an interesting psychological phenomenon, whereby tipping can occur if a substantial number of users alter their expectations regarding the eventual size of the network, irrespective of any change in product design or price.[93] As a result, undertakings may be incentivised to invest in marketing and creating a recognisable brand and the perception of a large network, rather than seeking to improve a product or decrease prices.

2. Negative Consequences of Imposing a Duty to Deal

Thus far, the focus of this article has been on the rationales for imposing the essential facilities doctrine and the importance of competitors having access to inputs necessary to operate in a market. The core of a thorough analysis of any issue, particularly in the context of law and economics, is to consider the subject from all angles. There is often a natural impetus to act in favour of smaller market players and start-ups. Although understandable, large corporations and dominant undertakings can generate scale efficiencies and create value for the economy. Furthermore, unfairly targeting larger undertakings can undermine the efforts to incentivise innovation and entrepreneurship in smaller market players, and more broadly give rise to rule of law considerations. With this in mind, this article will now briefly consider the benefits of

[91] Arora (n 8) part III.
[92] Daniel L Rubinfeld, 'Antitrust Enforcement in Dynamic Network Industries' (1998) 43 Antitrust Bulletin 859, 865.
[93] ibid.

big data on competition and, more in depth, considerations which should be taken into account prior to regulation and the potential negative consequences which may arise as a result of erroneously imposing a duty to licence access to big data in creative industries.

The use of big data can undoubtedly generate procompetitive effects in creative industries. These benefits must be assessed against the potential anticompetitive and market foreclosing effects of the exclusive possession of big data in this market. Big data can be used to improve quality and increase innovation for consumers.[94] The highly accurate market insights gleaned from this data can be used to dramatically reduce the risk of failure, leading to lower initial investment costs for producers. In a competitive market, such savings would be passed on to the consumer in the form of competitive pricing. Targeted advertising may decrease costs to producers as producers will no longer need to pay for widespread or billboard advertising but, will instead focus on advertising to individuals more likely to consume the product.

Beyond the direct beneficial effects of big data on competition, regulation can give rise to indirect anticompetitive effects and negative externalities. The essential facilities doctrine can have beneficial and harmful effects on markets, affecting consumer and producer welfare. It is therefore imperative to consider variables which can play a substantial role in determining the features of a market. The market for creative industries, and access to big data therein is shaped by myriad factors, all affecting the market in varying ways. In consequence, a decision to implement a duty to deal regarding big data must seek to take these factors into account, with the goal of establishing an economically viable competition policy, enabling market entrants to compete without destroying the incentives for undertakings to invest in such inputs.

a) Schumpeterian Markets and Schumpeterian Competition

Schumpeterian markets are markets in which there is not competition for a share of the market but rather continuous competition for the market as a whole, where the winner will enjoy a monopoly of the market in question. There are 'winner and losers and […] the process is one of continuing disequilibrium'.[95] This occurs most frequently in the case of natural monopolies, where the market is not large enough to support multiple undertakings or in respect of economies of scale, where undertakings can become more efficient as they grow in market

[94] D Daniel Sokol and Roisin Comerford, 'Does Antitrust Have a Role to Play in Regulating Big Data?' in Roger D Blair and D Daniel Sokol (eds), *The Cambridge Handbook of Antitrust, Intellectual Property and High Tech* (Cambridge University Press 2017) 296.

[95] Richard R Nelson and Sidney G Winter, *An Evolutionary Theory of Economic Change* (The Belknap Press of Harvard University Press 1982) 276.

share, thereby decreasing their marginal costs and making it increasingly difficult for entrants and competitors to gain a foothold in the market, giving rise to quasi-monopolies.

Schumpeterian markets are not inherently anticompetitive and may be subject to rapid rates of innovation and creative destruction.[96] Creative destruction, as posited by Joseph Schumpeter, is a process by which there is constant competition for markets, regardless of whether they appear monopolistic or oligopolistic in a static snapshot. Markets are always vulnerable to capture by those who can develop new and innovative technologies to satisfy customer demands more efficiently. Schumpeter posited that 'large firms with market power accelerate the rate of innovation'.[97] He argues that wherever it may appear that an undertaking enjoys considerable market power without the threat of competition, an undertaking will always feel as though it is open to potential competition and therefore 'will in the long run enforce [behaviour] very similar to the perfectly competitive pattern'.[98]

The model of Schumpeterian markets explains the phenomenon of online operators gaining scale rapidly, only to soon be replaced by another firm. '[E]conomic risk-takers and innovators are constantly [revolutionising] the digital economy and bringing about equally seismic disruptions throughout our culture'.[99] Regulating a market characterised by rapid innovation and frequent disruption may serve only to interrupt this competitive process, slowing it down and reducing incentives to compete and develop new technologies, due to a reduced prize for incumbents and an increased ability to free ride on the efforts of others. Following the logic of Schumpeter, markets for SVOD and music streaming services should remain unregulated, as the growing market power of a small number of firms will increase the rate of innovation and disruption across the industry, thereby increasing consumer welfare.

b) Dynamic and Static Considerations

Dynamic and static considerations are particularly important in Schumpeterian markets. When dynamic effects are not included in policy decisions, long-term effects of regulation can be particularly harmful. If a snapshot view of a Schumpeterian market is taken at any given point in time, it will appear to be a monopoly. Static views cannot account for the rate of market disruption, growth, and innovation.[100] In fact, such markets may be as competitive over time

[96] The concept of creative destruction was introduced in 1942 by the renowned Austrian scholar Joseph Schumpeter. See Joseph Schumpeter, *Capitalism, Socialism and Democracy* (Routledge 2010) 71ff.
[97] Tom Nicholas, 'Why Schumpeter Was Right: Innovation, Market Power, and Creative Destruction in 1920s America' (2003) 63 (4) The Journal of Economic History 1023, 1023.
[98] Schumpeter (n 96) 75.
[99] Adam Thierer 'The Perils of Classifying Social Media Platforms as Public Utilities' (2013) 21 CommLaw Conspectus 249, 295.
[100] Meadows (n 53) 817.

as any other. However, incumbents in Schumpeterian markets may gain the ability to entrench themselves due to control over an essential facility or by virtue of being incumbent when the market tipped in their favour. In such instances, regulation must seek to prevent entrenchment and consider compelling licencing of access to the facility in question, thereby aiming to restore the competitive potential of the market. These conflicting issues should be reconciled before regulation can be implemented in such cases.

In innovative markets, competition policy may have two major consequences. If effective, rents will be prevented from flowing from entrants to incumbents and some of these rents will be captured by consumers. Furthermore, the decrease in rents will decrease the value of incumbency. In Schumpeterian markets, characterised by sequential competition for the whole market, innovation is driven by the possibility of earning monopoly profits.[101] Gans explains this neatly, stating: 'The higher the rate of innovation, the shorter the lifetime of incumbency'.[102] Therefore, as the potential prize for innovation increases, so does the probability of innovating, eventually reaching equilibrium. This is detailed in Figure 1, where *B(w)* is 'the maximum likelihood of generating an innovation tomorrow in a market with innovation size *w*'[103] and *S(w)* is the supply of innovation:[104]

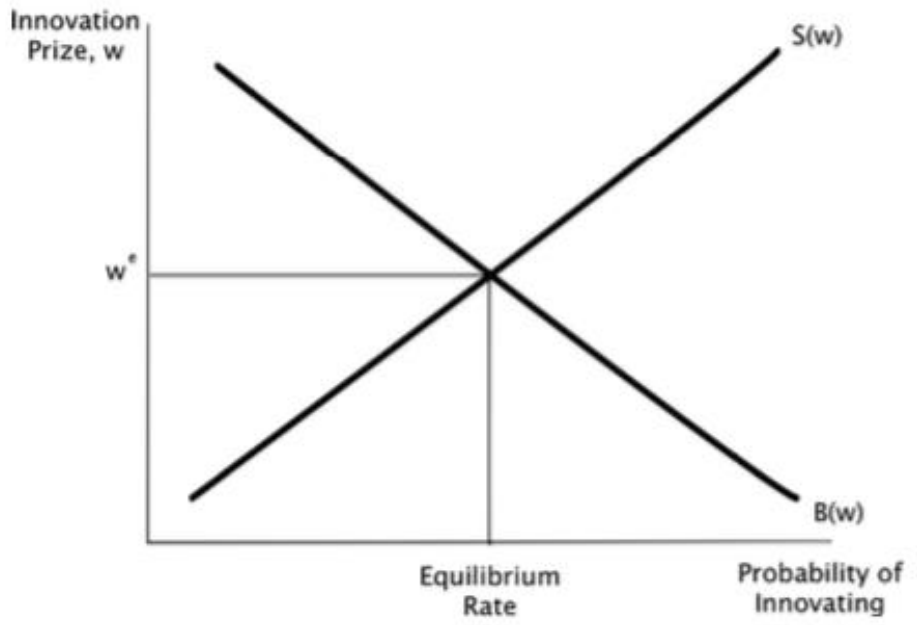

Figure 1 Equilibrium Rate of Innovation

[101] Gans (n 77) 5.
[102] ibid 7.
[103] ibid 8.
[104] ibid.

This analysis implies that regulation may only serve to decrease the rate of innovation as the potential prize for incumbency will inevitably be reduced as a result of that innovation. '[T]he development of dynamic markets should not be impeded by the actions of the sitting monopolist because this forecloses new benefits from competitive enterprise.'[105] Competition policy must be designed so as to prevent incumbents from becoming entrenched in the market, preventing the competition for the market, as may happen when an incumbent enjoys control over an essential facility. In such instances, incumbents may seek to argue that market power is difficult to ascertain in Schumpeterian markets.[106] Markets using big data can be subject to such problems, as certain advantages particularly in scale industries may be self-reinforcing, given that there is a substantially larger customer base than existed at the time of the entry of the current incumbents such as Netflix and Spotify. 'When the above market conditions exist and one competitor has possession of the essential facility as a result of investments in exogenous markets or as a fortuitous side-effect of being the monopolist to which a network-economy tipped, or because it is simply in possession of information about IP that is instrumental to competition, public policy would suggest that the resource be shared.'[107]

c) Free Riding

Free riding is at the heart of intellectual property law. Free riding occurs when an undertaking benefits from the efforts and expenditures of others. IPRs allow producers to recoup their investment by preventing free riding. The *sui generis* database protection discussed previously, operating under a sweat of the brow theory, exists solely to prevent free riding on investments made by the original database creator.[108] Granting competitors access to the data collected by other firms could incentivise free riding. Without the ability to rely on inputs generated by others, competitors would be compelled to develop their own inputs, at their own effort and expenditure. This need can further drive innovation, as, if unable to free ride, competitors may in turn develop inputs superior to those which they sought access to, safe in the knowledge that they will also be granted strong IP protection. The ability to free ride can also disincentivise innovation in so far as competitors will be less likely to invest time and money in innovating as they cannot be sure of strong IPRs as a reward for their risk. Such an incentives structure

[105] Meadows (n 53) 808.
[106] ibid 812.
[107] ibid 813.
[108] This database protection gives IP rights to the individual who has compiled the information in the database and operates independently of the IP rights over the data contained therein. This is discussed in further detail in Part D of this article. See also Database Directive (n 66).

can be expected to lead to suboptimal levels of innovation.[109] If compelled to grant access, incumbents may also be disincentivised to develop their systems, as any incremental innovation may be subject to such a duty and therefore not economically rational.[110] Hence, free riding can stifle innovation, on the part of all market players, ultimately to the detriment of consumer welfare.

d) Data Protection and Privacy

While a full and in-depth analysis of the data and privacy implications of a duty to licence access to consumer data is outside of the scope of this article, it would be remiss to neglect any mention of the issue. Data protection and privacy have become increasingly important issues, particularly in light of the introduction of the EU's General Data Protection Regulation (GDPR), which came into force in 2018.[111] GDPR imposes substantial fines on undertakings who fail to adequately protect consumer information, with maximum fines for infringement at 4% of the annual global turnover in the preceding financial year or €20 million, whichever is greater. It is not outside the bounds of possibility that the collection of big data by streaming services will be more heavily regulated going forward, with respect to what information they can collect, store and share. However, a duty to deal could expose undertakings compelled to grant access to their consumers' information to liability under GDPR. This can have far reaching effects as GDPR is not only applicable to undertakings located in the EU but also any undertakings which offer goods or services (including free goods and services) to data subjects in the EU and undertakings who monitor the behaviour of data subjects, if that behaviour takes place in the EU.[112]

GDPR does not apply to anonymised data.[113] At first, this appears to be an easy solution to the data protection issue, but in reality could provide undertakings a loophole by which they could avoid granting access to their data. Undertakings could contend that they cannot provide access on the basis that their data cannot be sufficiently anonymised so as to avoid GDPR liability. Alternatively, undertakings could anonymise data to the point that much of the value is removed from the data in question. If all markers that could in any way be construed as capable of leading to the identification of a data subject were removed, the undertaking in

[109] Lianos (n 56) 13.
[110] Lemley M, 'Property, Intellectual Property, and Free Riding' (2005) 83(4) Texas Law Review 1031, 1040.
[111] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L119/1.
[112] ibid Article 3.
[113] ibid Recital 26.

control of the data would still enjoy a substantial advantage over the competitor requesting access.

F. CONCLUSION

In the past decades, the emergence of new technologies has caused tremendous levels of disruption across many industries. Particularly in the case of creative industries, these developments have given rise to interesting intellectual property considerations. Changing methods of production challenge the fundamentals of what has traditionally understood to be creativity.

The law must seek to promote innovation and protect IPRs without enabling early market actors to become entrenched, thereby stifling competition and follow-on innovation. This is a rapidly evolving industry and innovation will proceed regardless of whether the law manages to keep pace. Access to substantial quantities of consumer information is becoming indispensable to compete in creative industries. Nonetheless, it is imperative that regulators remain cautious in their approach to regulation as incentives to free-ride can easily be created, particularly when focusing on static rather than dynamic considerations. Regulators must also be careful to protect competition itself rather than merely the competitors and bear in mind that there is nothing inherently anticompetitive in a large market share. With regards to a first mover advantage, pioneers in an industry often enter markets with substantial economic risk to themselves, frequently staking the fortunes of the undertaking on the success of that venture. The imposition of a duty to deal creates issues regarding data protection and privacy. This arises not only in the need to avoid infringing GDPR, but also in restraining the holders of big data from using GDPR as a shield to avoid providing the data in question, or rendering it virtually unusable through excessive anonymisation Undertakings should not be, in a sense, punished for their success and innovation. There is a delicate balance required when shaping policy concerning one area of law which will undoubtedly affect another area of law, such as in this instance with respect to both competition policy and intellectual property rights.

It would be premature to take a conclusive stance on whether a blanket implementation of the essential facilities doctrine with regard to big data in creative industries would have a positive effect on long term competition and innovation. A duty to deal may be a beneficial tool in fostering competition and innovation but must be carefully crafted so as to avoid negative externalities where possible. The author is of the opinion that any duty to deal should only be implemented regarding raw data rather than algorithms or analysis, given the

interference in intellectual property rights involved. Competition is undoubtedly an important aspect of a functioning economy, but intellectual property rights are arguably no less important. Intellectual property, not only in relation to creative industries, is at the centre of many of the most significant developments in human history. Without adequate protection, development may grind to a near standstill, to the detriment of consumers and the economy as a whole. Creative industries cannot be viewed in a vacuum and care must be taken when developing policy to consider the potential ripple effects which regulation in one industry can have on another industry or policy area. Imposing a widespread duty to licence access to big data could give rise to negative externalities in all industries involving intellectual property rights.