



Commodification beyond data: regulating the separation of information from noise

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Abstract

Digital technology brought informational saturation to our lives. In cyberspace, private and business users need help to make valuable pieces of information stand out from the noise of excessive information. With search algorithms, recommender systems, and online advertising, digital platforms specialised in providing relief for this problem. Their technologies arrange digitalised information to make it intelligible and relevant for individuals. But the separation of information from noise did not only become a necessity to comfortably navigate the depths of the web, it also became a commodity. There is a demand for it, a supply, a price, and an exchange on markets which is enabled by private law. The examples of general search, recommender systems, and online advertising illustrate that. At the same time, their commodification can become problematic. This paper argues that in the European Union (EU), the separation of information from noise has become a contested commodity according to M. J. Radin's framework. The Digital Services Act and the Digital Markets Act purposefully limit the influence of the market price mechanism on the design and allocation of the separation technology to protect legal goods like the democratic process, innovation, and privacy.

Keywords: Commodification; Digital Platforms; Digital Services Act; Digital Markets Act

1. Introduction: understanding noise

Noise has many shapes. Its audible form is emitted by a stormy ocean. Although each droplet in the ocean's waves has a unique timbral character, like single drips in a quiet puddle, they all become indiscernible in the aggregate sound of millions of droplets. The ocean's noise is nature's best equivalent to so-called *white noise*, which contains all audible frequencies in equal proportions, and when digitally represented, does not exhibit any repeating pattern: White noise is the audible representation of randomness.¹

In data science, the notion of noise is also related to randomness. Here, it refers to *casual* relationships between data points, contrary to *causal* relationships. It designates, similarly to psychoacoustics, the presence of data points that cannot be explained by the application of a model. Noise is the absence of a story that can be told about the data, the absence of discernible patterns. A very noisy dataset can make the transmitted information unintelligible, not unlike loud background noises during an ordinary phone call.²

The digital economy brought a new form of noise to our lives. Digital technology makes so much information available to internet users that its sheer quantity makes it unintelligible.

¹G Wakefield and G Taylor, *Generating Sound & Organizing Time. Thinking with Gen~ Book 1* (Cycling '74 2022) 91; C Roads, *The Computer Music Tutorial* (MIT Press 1996) 1062–3.

²X Zhu and X Wu, 'Class Noise vs. Attribute Noise: A Quantitative Study' 22 (2004) *Artificial Intelligence Review* 177.

Take for example an internet user searching for a new surfboard. Would she be obliged to type in the URL address of every single surfboard sold on the internet, then her lifetime and mental capacity would not suffice to make a reasonably informed decision. That said, the perfect board might be out there, but it's drowned in an ocean of unfiltered information.

In cyberspace, there are many situations where private and business users need help to make valuable pieces of information stand out from the background of noise. Digital platforms specialised in providing relief for this problem.³ Many of their products and services arrange digitalised information in a way that makes it intelligible and relevant for individuals. Like noise-cancelling headphones, these products filter out superfluous information to let only a curated selection pass to the attention of their users.

The technology to separate relevant information from noise did not only become a necessity for users to comfortably navigate the depths of the web. It also became a commodity. Section 2 of this paper shows why: there is a demand for it, a supply, a price, and market transactions which are enabled by private law. This is illustrated by the examples of general search and recommender algorithms. Their commodification, however, can become problematic. While general search and recommender systems generally reduce noise for their users, they are often monetised through the addition of new layers of noise: Advertising. That might not be bad per se, but if the lines between advertising and the organic selection become blurry, and if it is unclear whose interests are represented by the selection of information, then users are misled. There are many ways for how separation services can generate a biased or otherwise distorted selection of information, reflecting the interests of other parties than the private user. The fact that influence over separation services is bought and sold, or in other words, that separation has become a commodity, encourages these takeovers of control. That is why Section 3 enquires whether the separation technology could be a contested commodity according to M. J. Radin's framework.⁴ Her argumentation invites to reflect on possible reasons to limit the influence of the price mechanism on the design of separation services. Can any type of influence over the separation of information from noise be bought and sold? Considering the technology's capacity to amplify and silence information in the context of a democratic society, but also in the context of competitive markets, when should its commodification be limited? At the same time, could separation technologies even exist outside a transactional logic? Section 4 applies these thoughts to some provisions of two recent pieces of regulation, the Digital Services Act ('DSA') and the Digital Markets Act ('DMA').⁵

The commodification of the separation of information from noise is a distinctive feature of the contemporary digital economy. Conceptualising it elucidates many debates in internet regulation, like those on filter bubbles, on restrictions to online political campaigns, on the blurry boundaries between advertising and entertainment, and even on the recent prohibition of self-preferencing in the context of vertically integrated platforms. This paper does not replace these discussions, but it complements them with an overarching theme.

2. Curating information in the noisy digital economy: an object of commodification

Separating information from noise means filtering out irrelevant information from the relevant one.⁶ Tech companies' separation technology generates results that are tailored to the available

³For example: Google, Meta, Amazon.

⁴MJ Radin, *Contested Commodities* (Harvard University Press 1996).

⁵Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act); Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act).

⁶The definition of what information is to be considered 'relevant' is tricky. One could say that it is the information that a user would have picked out of the noise if she had the capacity to do so without help from technology. In other words, relevant information is the selection that represents the internet user's interest, and not the interests of other parties.

personal data of individual internet users. Personalised curation of information happens both in general search and in recommender systems. And indeed, it is the personalisation that allowed the separation process to become an influential commodity. With the help of contract law, influence on and the use of separation technology is exchanged on markets and generates commercial revenue. At this point, it's important to note that this section uses a stylised distinction between search results, recommended items, and advertising. This is for the purposes of clarity; in reality, the three separation technologies are often much harder to differentiate and categorise.

In general search, the search engine helps users to cut through the noise of millions of websites to find desired information. It identifies websites that contain the users' keywords. But in most cases, this will not filter out enough noise ('Google found 230,000 results...'). That's why the search engine curates a much smaller list of websites that the algorithm deems to be most relevant to the individual user ('... and these are the ten most interesting links for you'). One strategy to select relevant websites is to rank a site higher in the results the more it is referred to by other sites, these referrals being themselves weighed more, the higher the referring sites are in the ranking. This is the basic idea behind Google's 'PageRank' patent which expired in 2019.⁷ But today's search algorithms also make use of personal data like physical locations, former search queries of the user, and many other types of online behaviour. Moreover, the algorithm can draw on circumstantial information and on search queries of users in similar situations. In Italy for example, searching the term *terremoto* a few minutes after the earth was shaking will not result in Google proposing the Wikipedia page explaining earthquakes, but it will produce a tab with information about the location and the intensity of the closest geological event. This information helps to evaluate an imminent danger and is thus much more relevant in the circumstances of the query. In sum, the information curation of search engines is highly targeted, which makes it so attractive to users.⁸

Recommender systems are in action when users signal that they might wish to consume a product or a service. They exist in various contexts. On retail platforms like Amazon, the product recommender system deduces knowledge about the user's product preferences from former purchases, visited websites, and other personal data. It considers the purchasing patterns of other users in similar contexts and ranks items according to them: 'The algorithms aren't magic; they simply share with you what other people have already discovered'.⁹ On YouTube, Netflix, and Spotify, the recommender system deduces from former plays and other online behaviour which content the user is likely to enjoy next. In sum, recommender systems help users to narrow down the choice of products to a reasonable amount and curate the selection according to available personal data. The commercial success of many platforms can be attributed in part to the good performance of their recommender algorithms.

Online advertising works a bit differently than the two examples from above. Online ads appear even if users did not signal their willingness to consume. Although online ads are ubiquitous, they do not correspond to a direct need of users. On the contrary, they make the users' internet experience noisier, because they add irrelevant or unwanted information to their queries. Waiting for ten seconds to be able to close an ad during a YouTube video means losing time and being forced to give attention to information that was not requested. In online ads, the separation of information from noise is therefore reversed. It's the advertising businesses who pay to make their product stand out from the noise of all the other available products.

It is no secret that general search and recommender systems are commonly monetised via advertising. In the current digital economy, the separation of information from noise for users is

⁷The PageRank patent is the foundation of the Google search algorithm: 'Method for node ranking in a linked database', <https://patents.google.com/patent/US6285999B1/en>, accessed 10 November 2022.

⁸Google discloses many details of its ranking mechanisms of websites: 'Guide to Google's Search Ranking Algorithms', <https://developers.google.com/search/docs/appearance/ranking-systems-guide>, accessed 23 November 2022.

⁹B Smith and G Linden, 'Two Decades of Recommender Systems at Amazon.Com' 21 (2017) IEEE Internet Computing 12.

made economically viable with the addition of unrequested information to the organic selection. This is the core of the complex commodification of these products.

Commodification happens when agents start to exchange things – or in a more Hofeldian understanding – *entitlements* over things against compensation. There is a colourful literature on the notion of commodification, and not a single definition can encompass the whole debate.¹⁰ However, several indicators can be highlighted. Usually, a thing becomes a commodity when there is a demand for it, a supply, a price, and exchange. Only then it becomes part of market exchanges. It should also be noted that things can exist prior to their commodification (personal data can exist before being exchanged on data markets). Things can also be de-commodified by prohibiting market transactions over them (there are good reasons to prohibit market exchanges over certain types of personal health data).

The separation of information from noise is an object of commodification. There is a demand for it, a supply, a price, and transactions. We saw above that there is a demand for separation. Users don't want to type in single URL addresses when they search for information, content, or products online. They use search engines and recommender systems instead. There is also a supply that satisfies this demand, mostly provided by big tech companies. The separation services also have a price, which is sometimes exchanged in monetary form. For example, a Spotify subscription and the usage of its recommender algorithm has a monthly cost. But more often, there is a barter transaction without monetary prices. Here, the price for the use of the separation service is the user's agreement to personal data exploitation, and in addition, the agreement to receive curated information that does not only correspond to the organic user requests, but that also contains ads or other distortions. When paying for services with money or accepting Terms and Conditions that contain a non-monetary cost, users enter a transaction. Contract law facilitates these transactions via adhesive contracts. It's important to add that the validity of user consent in that context is debated.¹¹ But in sum, contract law provides the tools to accommodate the separation of information from noise in a transactional logic. And these transactions do take place every day.

From the business perspective, the crux for big tech companies is to equilibrate the information product so that it corresponds to the interests of both private users and advertisers. In the context of multi-sided markets, organic and non-organic information must be presented in a way that both parties are willing to enter into an agreement with the platform.

What the platform sells to both sides is the *transmissibility* of information, but not the information itself. For example, Google doesn't own most websites that it refers to, and for those that it does own, it doesn't necessarily own the content (eg YouTube videos are not the property of YouTube). Both users and advertisers have an interest in only limited amounts of information being transmitted – but the users want it to represent their interests, whereas advertisers want it to

¹⁰See the definitions compiled in C Hermann, 'A Theory of Commodification' in C Hermann (ed), *The Critique of Commodification* (Oxford University Press 2021) 20–3. For example, Appadurai considers that a thing can find itself in a 'commodity situation [. . .] defined as the situation in which its exchangeability (past, present, or future) for some other thing is its socially relevant feature' A Appadurai (ed), *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge University Press 1986) 13. According to Healy, 'to commodify something is simply to create a market for its exchange where none has existed before.' K Healy, 'Exchange in Human Goods' in *Last Best Gifts: Altruism and the Market for Human Blood and Organs* (University of Chicago Press 2006) 4. Castree defines it as 'a process where qualitatively distinct things are rendered equivalent and saleable through the medium of money' N Castree, 'Commodifying What Nature?' 27 (2003) *Progress in Human Geography* 273, 278. For Bakker, commodification 'entails the creation of an economic good, through the application of mechanisms to appropriate and standardize a class of goods and services, enabling them to be sold at a price determined through market exchange.' K Bakker, 'Neoliberalizing Nature? Market Environmentalism in Water Supply in England and Wales' in N Heynen and Others (eds), *Neoliberal Environments: False Promises and Unnatural Consequences* (Routledge 2007) 103.

¹¹For a review of the literature on online consent, see G Burkhardt and Others, 'Privacy Behaviour: A Model for Online Informed Consent' 186 (2023) *Journal of Business Ethics* 237.

represent theirs. There is a clear trade-off for the final information product, and the platform cannot fully satisfy any side's interest.

Besides online advertising, third-party businesses spend many resources to appear in the organic selection of information. Some of these strategies are regrouped under the term 'search engine optimisation' ('SEO'), which includes for example the creation of meta descriptions and keywords for a website so that Google's web crawler can find it more easily.¹² When it comes to recommender systems, strategies to appear higher in the organic results can also imply a monetary transaction with a platform.

It's important to add that even big tech firms pay others to stand out from the noise. In 2021 for example, Google reportedly paid Apple \$15 billion to remain the default search engine on Apple's widely used Safari browser.¹³

In conclusion, the commodification of the information/noise separation has consequences on the very design of the informational end product. Without being embedded in a transactional logic, the selection of information might focus on different criteria. But a differently designed selection also calls for a different monetisation. For example, if the final selection contains no ads and has no other forms of financing, it might have the characteristics of a public good that suffers from undersupply. When speculating about a differently designed separation of information from noise, problems appear: Who would be willing and able to provide the service? Who would finance it, and in what form would the monetisation take place?

3. The separation of information from noise as a contested commodity

In 1996, Margaret J. Radin described in 'Contested Commodities' a class of objects that Western society has not fully endorsed as commodities.¹⁴ For example, while there are potentially willing buyers and sellers of kidneys, sexuality, and an exemption from military service, many are uncomfortable with the idea to have these things exchanged on markets. Their commodification is contested.

Radin criticises the 'universal commodification' and 'market rhetoric' of the early law & economics movement, which would tend to remove any limiting principle to what can be exchanged on markets. She takes the examples of Gary Becker's market for children and Richard Posner's description of the universal reach of property rights,¹⁵ and apprehends that

Universal commodification implies that all value can be expressed in terms of price. For those who believe value is not unitary in this way, commodification 'reduces' all values to sums of money. Commodification is a reductionist conceptual scheme. Sums of money, in turn, can be compared consistently in a linear way. Commodification is thus also a conceptual scheme that is committed to commensurability of value.¹⁶

Radin's commensurability argument bridges the ontological gap between rights-based and market-based thinking. In sum, market prices cannot always reflect every facet of the value of a thing. Sometimes, there is an incommensurable value (in Radin's examples it is often related to human dignity) that a monetary transaction cannot price in. That is why it can make sense to use

¹²Google, 'Search Engine Optimization (SEO) Starter Guide', <https://developers.google.com/search/docs/fundamentals/seo-starter-guide>, accessed 22 November 2022.

¹³J. Moreno, 'Google Estimated To Be Paying \$15 Billion To Remain Default Search Engine On Safari', <https://www.forbes.com/sites/johanmoreno/2021/08/27/google-estimated-to-be-paying-15-billion-to-remain-default-search-engine-on-safari/?sh=756f8dec669b>, accessed 11 November 2022.

¹⁴Radin (n 4).

¹⁵GS Becker and N. Tomes, 'Child Endowments and the Quantity and Quality of Children' 84 (1976) *Journal of Political Economy* 143; RA Posner, *Economic Analysis of Law* (Ninth edn, Wolters Kluwer 2014) 37–93.

¹⁶Radin (n 4), 8.

regulation that limits commodification, or in other words, that limits the effect of the pricing mechanism on the design and allocation of the contested commodities. This idea implies that some regulations can be useful even if they do not strictly satisfy a welfare maximisation standard:

To the extent that we are stubbornly committed to the idea that these things that are very important to human life, health, and self- and community development ought not to be completely monetised, regulation that does not (theoretically) meet an efficiency test can in principle be justified.¹⁷

Radin's argument was brought forward at the brink of digitalisation, and her examples of contested commodities are from the pre-digital world. But her thinking can be transposed to cyberspace, where new contested commodities emerged. The most iconic digital contested commodity might be personal data. The monetary price of personal data sets is measurable, and it's the object of innumerable transactions every day. But monetary prices might not be able to fully reflect each human's fundamental need for privacy, which is affected by the exchanges. The transactions that take place may even change the way individuals value their privacy. In the words of Radin, universal commodification 'cannot capture – and may debase – the way humans value things important to human personhood'.¹⁸

This paper does not focus on the commodification of data, but on the commodification of its transmissibility. And indeed, the commodified separation of information from noise brings more complicated problems. First, in the advertising-financed internet, the price of a separation service diminishes the utility of the very same service: When platforms propose to generate an information selection on the condition that it contains the noise of advertising and potentially other biases, then the quality of the service itself diminishes, particularly when the advertising is not easily identifiable.¹⁹ Users must decide how much advertising noise is acceptable to keep using a separation service. As described in Section 2, the design of the final information selection depends on the interests of users *and* of advertisers, and big tech companies need to balance them in their products.²⁰

Secondly, there is a problem of diffuse negative externalities which are difficult to price in. The price of a separation service might not capture its positive and negative utility for every affected stakeholder, but only for the parties to the transaction. But in the context of multi-sided markets, the transactions of users and advertisers with the platform have not only effects on themselves. Two examples will illustrate this point.

First, general search and online advertising bear the potential to be misused during election campaigns. Without regulation, the strategic use of misinformation during a campaign has not only implications for the single user who is presented with false information and is prone to make an ill-informed choice. The negative externality goes much beyond. A misinformed population creates problems for the democratic process as such, and this generates diffuse costs for a society that are, at least, very hard to translate in a purely economic welfare framework. For example, looking at the recitals of the European Commission's proposal for a regulation on the transparency and targeting of political advertising, the text seems not to be motivated by economic welfare concerns.²¹

¹⁷*Ibid.*, (n 4) 110.

¹⁸*Ibid.*, 9. There is an instance of reflexivity. If commodification, ie the measuring of the value of things via market prices, becomes the only way to measure any value, then this might diminish the importance that individuals attach to values that cannot be priced in. This in return shapes market prices.

¹⁹Art 26 of the DSA contains an obligation for platforms to clearly identify advertisements. In a slightly different context, the so-called 'authenticity' of social media influencers could be understood as a variable that expresses how easy it is to distinguish advertising from non-advertising in the influencer's content.

²⁰It's important to note that the commodification of info/noise separation does not lead to scarcity. On the contrary, as most of the separation products do not have a monetary price, everyone with an internet access can use them.

²¹Proposal for a Regulation of the European parliament and of the Council on the transparency and targeting of political advertising (COM/2021/731 final).

Second, recommender systems can bear problems for competition and innovation. Without regulation, the list of results of a recommender system could be biased by market incumbents so that new entrants' products never cut through the noise. This could generate market foreclosure for new entrants, which is a problem for competition within the platform. With foreclosed markets, it is difficult to know how much welfare would have been created if new entrants with potentially innovative products had been able to enter the market. That means, calculating the cost of this practice to society amounts to speculations about highly counterfactual scenarios, and there is a looming nirvana fallacy. The cost of absent future innovation to society might be very hard to determine.²²

In both examples, an information/noise separation that is exclusively shaped by the price mechanism might generate diffuse negative externalities. The externalities generate costs that are difficult to track and to measure in terms of economic welfare. Therefore, it might be better to prohibit certain economic agents to take control over the information selection via the price mechanism.

The third problem of commodification concerns incommensurability in a more philosophical sense. Most will agree that the democratic process and innovation are valuable to society. But can their value ever be quantified and fully expressed as a monetary price, or would this be an instance of the value reductionism that Radin denounces? The answer to this question is the core of the problem of contested commodities. It might vary from individual to individual.

In sum, it can make sense in some instances to limit the influence of the price mechanism on the design of the separation of information from noise. That does certainly not mean that *any* form of information/noise separation is a contested commodity according to Radin. It simply means that certain transactions might be prohibited, even in the presence of willing buyers and willing sellers.

4. Regulating the contested commodity

Two recent pieces of regulation from the European Union intervene into the commodification of information/noise separation in the digital economy: the DSA and the DMA. They have very different purposes. While the DSA focuses on content moderation and transparency obligations for platforms, the DMA intervenes into the competitive mechanics of multi-sided markets. However, the DSA and the DMA partially overlap: they both regulate the competition between different pieces of information to cut through the noise, and limit the freedom of participants to steer the separation mechanism in the interest of one or several market participants.

The first example was about limiting the ability of political and economic agents to use general search and online ads to spread misinformation during election campaigns. The reason was that misinformation can generate diffuse costs for a democratic society, especially when it's unsure whether the value of the democratic process can be expressed at all in the terms of economic welfare.

The DSA addresses this situation. First, the regulation obliges platforms to identify any advertising in their information selection, provide details about the advertiser, and give general information about the parameters that were used to target the individual user with the ad.²³ There is an additional obligation for 'very large online platforms' and 'very large online search engines' to provide a repository with information about past advertising campaigns on the platform, which needs to be publicly accessible up to one year after an ad went online for the last time.²⁴ Very large platforms and search engines also need to perform a risk assessment to 'identify, analyse and

²²That is especially true when considering that not every innovation leads to an increase in aggregate welfare. The development of new weapons could be an example.

²³Art 26, DSA.

²⁴Art 39, DSA.

assess any systemic risks in the Union stemming from the design or functioning of their service and its related systems, including algorithmic systems, or from the use made of their services'.²⁵ This includes 'any actual or foreseeable negative effects on civic discourse and electoral processes, and public security'.²⁶ There are due diligence obligations for platforms to mitigate these risks, as well as a 'crisis response mechanism' which confers powers to EU Commission against platforms in case of a serious threat to public security or public health that might be amplified by their products.²⁷

All in all, while the DSA endorses advertising as a means to monetise the separation of information from noise, it also limits the influence of the pricing mechanism on the separation service. In the first example, the goal is to impede the spread of misinformation via advertising and general search, even in the presence of willing buyers and providers of such a service. In that sense, many other regulatory limitations on advertising constitute a limitation of the commodification of the separation of information from noise. In particular, the separation of *false* information from noise is subject to incomplete commodification.²⁸

The second example was about recommender systems that could be biased against the products of new market entrants or favour the downstream products of a vertically integrated platform. This can have the effect of market foreclosure, which could diminish the innovation that the new entrants can bring to the market.

First, the DSA obliges platforms to inform users of the parameters used to establish the recommendations, as well as 'the reasons for the relative importance of those parameters'.²⁹ This obligation does not restrict the platform's freedom to select the parameters, but it aims to generate more transparency for users. The DMA on the contrary, which intervenes into the competitive structure of the platform economy, brings limits to the choice of parameters for the recommender systems of vertically integrated platforms:

The gatekeeper shall not treat more favourably, in ranking and related indexing and crawling, services and products offered by the gatekeeper itself than similar services or products of a third party. The gatekeeper shall apply transparent, fair and non-discriminatory conditions to such ranking.³⁰

The adjectives 'fair' and 'non-discriminatory' are a bit puzzling. Every parameter that contributes to separate information from noise is discriminatory – that is the definition of the separation of information from noise, a technology without which the internet would be largely unusable. The notions of fairness and non-discrimination could refer to the obligation to establish equal ranking conditions for the platform's own products and for those of third parties. But in this case, the second sentence seems superfluous in addition to the first one, and an important danger would be outside the scope of the Article: it is imaginable that a third-party producer would want to pay the platform to receive ranking conditions so favourable that the market becomes practically foreclosed for other third parties and new entrants. Therefore, the second sentence could also be interpreted in the sense that the platform must provide a level-playing field for *all* competitors, and that it cannot modulate the parameters to the advantage of any third party. In this case, the influence of the price mechanism on the design of recommender systems would be greatly limited.

²⁵Art 34 (1), DSA.

²⁶Art 34 (1) c, DSA.

²⁷Art 35 and 36 respectively, DSA.

²⁸Incomplete, but not fully prohibited. There are types of false information that can be curated and presented to users, for example parody.

²⁹Art 27, DSA.

³⁰Art 6 (5), DMA.

But again, as all separation of information from noise is a form of discrimination, and every discrimination advantages someone, the paragraph remains rather unclear.

The example shows that recommender systems have become a contested commodity due to their importance for competition. The DSA and the DMA limit the gatekeepers' property rights over their algorithms, and therefore the effect of the pricing mechanism on the design of information/noise separation.

In the examples, it is the incommensurable value of the democratic process and of foregone innovation that seem to justify the existence of legal rules that are not exclusively geared towards efficiency or commensurable welfare maximisation. Admittedly, the DSA obligation for platforms to clearly identify advertising in an information selection tries to reduce information costs to users. But commodities are also contested because their potential market price cannot reflect their diffuse externalities and costs, and most certainly, neither their intrinsic value to society. The omnipresent 'fairness' wording in the DMA could be understood in that sense.³¹

In sum, legal rules play an ambiguous role for the commodification of information/noise separation. Contract and property law provide market agents with the tools to transform separation technology into services that can be sold on markets. But regulation also restricts the price mechanism's influence on design of certain parameters that could guide the separation process. In the end, law enforcement can even make our internet experience noisier, for example when favouring the development of advertising markets.³²

Though, to come back to more general conclusions, a slight amount of noise in our internet experience is not bad per se.³³

5. Conclusion

The commodification of the separation of information from noise, and not only the commodification of information itself, might be one of the distinctive traits of modern informational capitalism. At the heart of informational abundance, separation technology is the new scarce good. There is a demand for the separation of relevant, useful, and targeted information from the background of random noise. Digital platforms respond to that demand.

General search, recommender systems, and online advertising are instances in which platforms sell the separation of information from noise as a service. In the context of multi-sided markets, separation services are mostly monetised through the sales of a preferential transmissibility of information: advertising. But advertising adds unwanted noise to the users' internet experience. Big Tech companies need to navigate that trade-off. The crux of the complex commodification of information/noise separation is that the final information product must satisfy both sides of the market, users and advertisers.

In cyberspace, economic competition and the competition of ideas revolve around the same question: What piece of information cuts through the background of noise? This paper presented

³¹The root word 'fair' appears 90 times in the final DMA version.

³²In 2022, the European Commission started an antitrust investigation into a potentially anti-competitive agreement between Facebook and Google in the online advertising market. An anti-competitive agreement usually limits output and increases prices. Is it really in the interest of internet users to intervene to make online ads cheaper for businesses and thus increase their output? European Commission, 'Commission opens investigation into possible anticompetitive conduct by Google and Meta, in online display advertising', https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1703, accessed 11 November 2022.

³³There are many instances where more noise can be desirable. (1) In social media, recommender systems are the culprits for what is commonly called 'filter bubbles' which designate spaces of ideological isolation in which users only encounter worldviews that are compatible with theirs and therefore reinforce them. When algorithms curate online content, adding a light degree of noise could pierce filter bubbles, and confront users with different opinions. (2) In data science, the absence of noise can be a sign for an overfitting model. (3) Even in the psychoacoustic world, adding a bit of noise can be enjoyable. For example, many appreciate vinyl recordings because they add 'warmth' (ie noise) to clinically clean music recordings.

a mental model for the regulation of economic activity that deals with the transmissibility of information.

In Europe, the separation of information from noise is a contested commodity in the sense of M.J. Radin. Its commodification might have effects on third parties and societal values that cannot easily be expressed in the terms of economic welfare. In that understanding, the DSA and the DMA are two regulatory pieces that limit the influence of the price mechanism on the design of the separation of information from noise. That is why not all their obligations fulfil an economic welfare maximisation standard.

Finally, when regulatory intervention is proposed in the context of information/noise separation, it's important to identify (I) the economic interests that are represented in the final information selection without regulation; (II) the interests that might be affected by a selection that is biased in favour of an agent against payment; (III) the existence of affected values that are incommensurable in the terms of economic welfare; (IV) forms of monetisation that fall away with a proposed regulation to protect those values; (V) agents who would be able to provide the service under a new regulation. Although not always explicitly, the DSA and the DMA take those points into account.

Competing interests. The author has no conflicts of interest to declare.