Special issue: Governing Data as a Resource

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Beyond the data flow paradigm: governing data requires to look beyond data

Charlotte Ducuing*

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charlotte.ducuing@kuleuven.be

The paper aims to contribute to the discussion on how to regulate and govern data as an economic asset. It critically discusses the 'data flow paradigm', defined here as the regulatory focus on data (transactions) with the purpose to enhance data exchange by establishing data markets. Based on the examples of the electricity and the automotive sectors with respect to data governance, the paper finds that the data flow paradigm alone is too narrow. This paradigm seems to bear the idea that there should be well-operating data markets, possibly by the operation of the law, and that such markets alone would deliver the grand policy expectations, such as 'AI' or 'data-driven innovations'. Yet, fostering data exchange is not an end in itself and should be regarded with respect to the sectoral objectives and constraints. As the study of the examples shows, the quest for appropriate mechanisms to govern data often leads to rediscovering old concepts, such as (data) commons or (data) platform. Finally, the paper discusses future possible regulatory intervention.

1. Introduction

The paper submits that the 'data flow paradigm', defined here as the regulatory focus on data (transactions) with the purpose to enhance data exchange by establishing data markets, is too narrow to govern data as an economic resource. The data flow paradigm is particularly exemplified, at the European Union ('EU') level, by the regulatory attempts to create ownership(-like) rights on data or, conversely, to impose data sharing obligations, as considered in the Communication from the European Commission 'Building the European data economy' of 2017.

Based on two sectoral examples in the electricity and automotive industries, the paper discusses *limitations* suffered by the data flow paradigm. As a matter of fact, the regulatory options discussed to govern data as an economic resource in both sectors are already much broader in scope and diversified. Although sometimes implicitly and/or disguised in technical considerations, the governance of data in both cases is discussed in terms of institutional arrangements between the stakeholders. They resemble well-known governance mechanisms, such as 'commoning' practices on the one hand and the creation of a monopolist (platform) operator on the other hand. One can observe a growing interest in scholarship and amongst policy makers to adapt these older governance mechanisms by apprehending data as a resource. This can be seen in the recently published 'European Data Strategy' from the European Commission.

The paper starts with a characterisation of the 'data flow paradigm'. Then the two following sections outline, in turn, the data governance mechanisms discussed in the electricity and in the automotive sectors, in order to fairly govern data as a resource. Against this background, the fourth section draws critical lessons with respect to the data flow paradigm. While this paradigm can be characterised as horizontal, in the sense of being general and context-agnostic, the determination of the fitness of data governance mechanisms appears to be highly contextual, both in terms of objectives and constraints. This being said, the fifth and last section concludes by opening avenues for further research. Although essentially contextual, many lessons can indeed be drawn from the analysis of data governance mechanisms in specific sectors, in order to better understand the factors influencing positively or negatively their fitness. The data flow paradigm is mainly a regulatory one. By showing its limitations, the paper also aims to contribute to opening avenues for further regulatory initiatives to regulate data as a resource.

2 Owning or sharing: the data flow paradigm

In order to define what is called here the 'data flow paradigm', the section presents, in turn, two of its sides, namely the creation of an ownership(-like) rights on data and, second, the enactment of data access or data sharing obligations. The data flow paradigm may obviously also encompass other regulatory measures.

The creation of ownership(-like) rights on data has been contemplated, in the Communication from the European Commission 'Building a European data economy', with the purposes to bring legal certainty as for entitlements on data and to empower parties providing or, respectively, producing data.[1] The aim was to "improve[...] the operation of data markets by transforming data into merchandisable private goods in much the same way as do intellectual property rights

* Charlotte Ducuing is a doctoral researcher at the Centre for IT and IP Law (CiTiP) at Katholieke Universiteit Leuven (KU Leuven), Belgium

[1] European Commission, Communication 'Building a European data economy', COM/2017/09 final, 10.1.2017 and the accompanying Commission Staff Working Document 'On the free flow of data and emerging issues of the European data economy', SWD/2017/02 final.

in regard of their subject matter".[2] In other words, the basic implicit rationale is that the law should endorse - and adapt to - the economic reality where data are being commodified. The creation of an ownership(-like) right on data has been discussed in the scholarship and mostly opposed by lawyers, based on a wealth of both conceptual and practical arguments.[3] This option was not retained in the ensuing proposal from the European Commission for a Regulation on the free flow of non-personal data,[4] which led to the adoption of the Regulation 2018/1807.[5] Yet, the discussion on data ownership is still on-going, somehow further developed around the newly-coined expression "data sovereignty" (or '*Datensouveränität*', as the expression arose in Germany).[6]

In contrast, the adoption of data sharing obligations boomed while the European Commission contemplated them as a means to foster data exchange in its Communication 'Building a European Data Economy'. Data sharing legal regimes have been imposed on public sector bodies for a long time with the Open Data and PSI Directive, which was recast and reinforced in 2019.[7] Not only does the recast Directive impose stricter rules on public sector bodies, but the scope *rationae personae* was also extended to i.a. public undertakings. A new category as "high-value datasets" was created: subject to delegated and implementing acts of the European Commission, these high-value data sets shall be made available for re-use by third parties, with limited (in any)conditions.[8] Additionally, *lex specialis* data sharing legal regimes are increasingly being adopted in many brick-and-mortar industry sectors, such as banking, farming, electricity, automotive industry and road vehicles.

Outside the world of online platforms, data sharing obligations have mostly targeted (public and private) entities in their quality of 'monopolist data holders'.[9] In the Open Data and PSI Directive for example, data are created in the course of public service activities operated by regulated entities outside market conditions (in particular "public sector bodies") in an exclusive manner. Similarly, the European Commission contemplates data sharing obligations to be imposed on vehicle manufacturers (or Original Equipment Manufacturers, 'OEMs') described as "exclusive [in-vehicle] data gatekeepers",[10] in addition to existing legislation on access to vehicle repair and maintenance information.[11] In the electricity sector, the recast of the Electricity Directive in 2019 includes new obligations to share electricity data.[12] The data holder, namely the entity in the electricity value chain which collects the data from the (smart) energy meter (usually the Distribution System Operators, 'DSOs', or the

2 Hanns Ullrich, 'Technology Protection and Competition Policy for the Information Economy. From Property Rights for Competition to Competition Without Proper Rights?', *SSRN Scholarly Paper* (Rochester, NY: Social Science Research Network, 12 August 2019), https://papers.ssrn.com/abstract=3437177."

3 Alain Strowel, 'Les Données : Des Ressources En Quête de Propriété - Regards Sur Quelques Développements Récents En Droit Européen', in Elise Degrave, Cécile de Terwangne, Séverine Dusollier, Robert Queck (eds) *Law, Norms and Freedoms in Cyberspace / Droit, Normes et Libertés Dans Le Cybermonde - Liber Amicorum Yves Poullet*, Collection Du CRIDS (Larcier, 2018), 251–68; Serge Gutwirth and Gloria Gonzalez Fuster, 'L' éternel retour de la propriété des données: de l'insistance d'un mot d'ordre', in *Law, norms and freedoms in cyberspace. Droit, normes et libertés dans le cybermonde. Liber amicorum Yves Poullet*, Collection du CRIDS (Larcier, 2018), 1717–140; Andreas Wiebe, 'Protection of Industrial Data – a New Property Right for the Digital Economy?', *Journal of Intellectual Property Law & Practice* 12, no. 1 (1 January 2017): 62–71, https://doi.org/10.1093/jiplp/jpw175; Josef Drexl, 'Designing Competitive Markets for Industrial Data – Between Propertisation and Access', *JIPITEC* 8, no. 4 (2017). Gutwirth and Gonzalez Fuster mostly emphasise the public good nature of information and knowledge, based on the principle of freedom of expression and fear that ownership(-like) right on data would amount to a privatization of information. Drexl, for his part, looks at how value is created in the data economy and warns against the possibility of anti-competitive effects of data ownership. He mainly opposes the creation of an ownership(-like) right on data, as the conceptual rationales for such a creation (e.g., to incentivize the generation and collection of data) are not met. For legal scholars in favor of the creation of an ownership(-like) right on data, see Eric Tjong Tjin Tai, 'Data Ownership and Consumer Protection', *Journal of European Consumer and Market Law*, no. 4 (2018): 136–140, https://doi.org/10.2139/ssrn.3172725; Herbert Zech, 'Data as a Tradeable Commodity – Implications for Contract Law', in *Josef Drexl (Ed.), Proceedings of the 18th EIPIN Congress* (The New Data Economy between Data Ownership, Privacy and Safeguarding Competition, Rochester, NY: Social Science Research Network, 2017), https://papers.ssrn.com/abstract=3063153. Finally, some have argued in favor of qualified forms of ownership on data, such as 'defensive' or 'non-exclusive ownership', which may eventually amount to unbundling the bundle of ownership rights, see Benoit Van Asbroeck, Julien Debussche, and Jasmien César, 'Building the European Data Economy Data Ownership', White Paper, 2017. See also the on-going project of the American Law Institute (ALI) and the European Law Institute (ELI) with the purpose to propose a 'data law', PRINCIPLES FOR A DATA ECONOMY, https://www.europeanlawinstitute.eu/projects-publications/current-projects-feasibility-studies-and-other-activities/current-projects/data-economy accessed 9 February 2020. Besides, the creation of an ownership(-like) right on data has been discussed also in the economic scholarship, see for instance Nestor Duch-Brown, Bertin Martens, and Frank Mueller-Langer, *The Economics of Ownership, Access and Trade in Digital Data*, 2017.

4 Proposal for a regulation of the European Parliament and of the Council on a framework for the free-flow of non-personal data in the European Union, COM/2017/0495 final - 2017/0228 (COD).

5 Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a framework for the free flow of non-personal data in the European Union, OJ 2018 L 303/59.

6 The novelty of 'data sovereignty', compared to data ownership, consist in its attempt to enforce data 'right' of the data 'owner' to keep control over 'his' data technically, based on a 'reference architecture'. See for instance the recently created International Data Space Association ('IDSA'), supported by the German government, IDSA https://www.internationaldataspaces.org/the-principles accessed 10 February 2020. The expression "digital sovereignty" is also particularly discussed in Germany, which the prospect of a Data Law, see Jeffrey Ritter and Anna Mayer, 'Regulating Data as Property: A New Construct for Moving Forward', *Duke Law & Technology Review* 16, no. 1 (6 March 2018): 229–32.

7 Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information, OJ 2019 L 172/56 ('Open Data and PSI Directive').

8 Open Data and PSI Directive, Art. 2 (10), Chapter V and Annex I.

9 Björn Lundqvist, 'Big Data, Open Data, Privacy Regulations, Intellectual Property and Competition Law in an Internet-of-Things World: The Issue of Accessing Data', in *Personal Data in Competition, Consumer Protection and Intellectual Property Law: Towards a Holistic Approach?*, ed. Mor Bakhoum et al., MPI Studies on Intellectual Property and Competition Law (Berlin, Heidelberg: Springer Berlin Heidelberg, 2018), 191–214, https://doi.org/10.1007/978-3-662-57646-5_8; Charlotte Ducuing, 'Data as Infrastructure? A Study of Data Sharing Legal Regimes', *Competition and Regulation in Network Industries*, 23 December 2019, https://doi.org/10.1177/1783591719895390.

10 European Commission, Communication to the European Parliament, the Council, The European Economic and Social Committee, the Committee of the Regions, On the road to automated mobility: an EU strategy for mobility of the future, COM/2018/283 final, and the Proposal from the European Commission for a Regulation of the European Parliament and of the Council amending Regulation (EC) No 715/2007 on type approval of motor vehicles [...] and on access to vehicle repair and maintenance information, COM(2019) 208 final. See also, Bertin Martens and Frank Mueller-Langer, 'Access to Digital Car Data and Competition in Aftersales Services', Working Paper, JRC Digital Economy Working Paper (Brussels, Belgium: JRC, European Commission, 2018).

11 Regulation (EC) N° 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, OJ 2007 L 171/1.

12 Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU, OJ 2019 L 158/125 (the Electricity Directive), see Art. 23 and 24.

Transmission System Operators, 'TSOs'), could easily reserve an exclusive access and use of such data. In this paradigm, every (smart) energy meter – just like every (smart) car – constitutes a market with respect to the data that it produces. The data sharing legal regime thereby confirms – or even establishes, such as in the case of the PSI Directive – the regulated entities in a role as (raw) data providers in the data economy. The market for data is conceived of as a parallel market, beside the original market on which the regulated entities are active (or aside public service activities, in the case of public sector bodies), such as the manufacturing and sale of road vehicles or the distribution of electricity.

Data sharing obligations depart from their competition law inspiration, regarding their purpose and also possibly the range of beneficiaries. In the name of ensuring a 'fair data level-playing field' or 'fair competition for data', they were often found to pursue at least two different objectives: First, the objective of *preventing* potential abuses from being caused by the exclusive (raw) data holder to its competitors or to companies active in related markets (*ex ante* approach as opposed to the *ex post* effect of competition law). Second, data sharing obligations are also increasingly ascribed a *proactive* objective, that is to feed the data economy and data-driven innovation by benefiting a broader range of parties, without harm or abuse to be necessarily involved. Data are then considered as a *purposive infrastructure* for the data economy, in the sense that data sharing obligations are expected to turn them into infrastructural resource feeding *yet-to-be-created* downstream activities.[13] Such an approach is visible, for instance, in the automotive industry, where the Commission observed, in a 2018 Communication, that in-vehicle data "have an enormous potential to create new and personalized services and products, revolutionize existing business models [...] or lead to the development of new ones".[14] It is this general purpose that the European institutions, businesses and scholars[15] have attempted to achieve by fostering or even imposing[16] data sharing. Interestingly enough, the regulatory focus no longer seems to target only public sector bodies and public undertakings, but also private actors, based on their consideration as 'raw data exclusive holder'.[17]

The creation of ownership(-like) rights on data on the one hand and data sharing obligations on the other seem, at first glance, to be at odds with one another. The latter makes it mandatory for the data holder to grant access and re-use to (some) third parties while, on the contrary, the former grants *control* on data to the data holder. Yet, both regulatory options appear to have in common to treat (raw) *data as the regulatory subject-matter*, and more specifically the (raw) data transaction or market for (raw) data. The implicit aim is to support or even create data markets, deemed instrumental to data exchange, in turn viewed as a desirable objective. This was well captured by Zech: "The task of the law is to ensure that data markets exist (since the exchange and use of data are desirable)".[18] This is essentially, in our view, the 'data flow paradigm', characterised thereby by both a regulatory objective and a regulatory subject-matter. The regulatory objective is to foster the flow of data with the aim to feed the data economy and to let data-driven innovation develop, based on data markets. It should finally be noted that the data flow paradigm is not limited to the two types of regulatory options outlined in this section. In this respect, the Regulation on the free flow of non-personal data laid down a general prohibition of national data localisation requirements.[19]

The two following sections outline the data governance mechanisms discussed in two sectors, namely the electricity and the automotive ones, in order to critically analyse the data flow paradigm. Although broadly used, the expression 'data governance' is not consensually defined. It is sometimes simply equated with "data management". From an information security or quality perspective, it may broadly refer to the control of - or alternatively to decision-making and -maker(s) with respect to - data management,[20] which may include intra-organisational division of tasks. 'Governance' generally refers to the high level management of organisations or countries, as well as the decision-making system and institutions for doing it.[21] From a policy and regulatory perspective, data governance can be defined as a system of rights and responsibilities that determine who can take what actions with what data. To be clear, the purpose is not to engage into a normative discussion on which data governance mechanisms would best serve the objectives and constraints in these sectors.

3. Electricity data governance

After having experienced liberalisation and vertical unbundling, the electricity sector is now undergoing major transformations along two trends. First, the integration of renewable electricity supply resulted in a decentralisation of the electricity supply. Second, the electricity sector is undergoing digitisation or the application of information and communication technology to the electricity system, particularly with the deployment of smart meters delivering near-real time consumption data.[22] As a result, distribution networks are expected to turn into "smart (distribution) grids",[23] in the sense that they allow for a better adjustment of electricity capacity demand and offer. Data are also expected to make existing markets more contestable, given the existence of information asymmetries between market operators and to allow for the creation of new data-driven personalised products and services, with the entry of new players on the market and possibly new markets. Data are thereby considered a required resource for concurrent purposes. "Information and data management [becomes] the interface between network and commercial side" and has become

[13] Ducuing (n 9) 7–8.
[14] European Commission, Communication 'On the road to automated mobility: an EU strategy for mobility of the future', COM/2018/283 final.
[15] Wolfgang Kerber, 'Data Governance in Connected Cars: The Problem of Access to In-Vehicle Data', *JIPITEC* 9, no. 3 (2018).
[16] See Report of 23.2.2018 on a European Strategy on Cooperative Intelligent Transport Systems (2017/2067(INI)) of the Committee on Transport and Tourism, point 41.
[17] Ducuing (n 9)
[18] Herbert Zech, 'A Legal Framework for a Data Economy in the European Digital Single Market: Rights to Use Data', *Journal of Intellectual Property Law & Practice* 11, no. 6 (1 June 2016): 462, https://doi.org/10.1093/jiplp/jpw049.
[19] Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a framework for the free flow of non-personal data in the European Union, OJ 2018 L 303/59, Art. 4.
[20] Rene Abraham, Johannes Schneider, and Jan vom Brocke, 'Data Governance: A Conceptual Framework, Structured Review, and Research Agenda', *International Journal of Information Management* 49 (1 December 2019): 424–38, https://doi.org/10.1016/j.ijinfomgt.2019.07.008.
[21] See the definition of 'governance' in the Cambridge online Dictionary, GOVERNANCE, https://dictionary.cambridge.org/dictionary/english/governance accessed 11 February 2020, and in the Oxford online Dictionary: GOVERNANCE https://www.oxfordlearnersdictionaries.com/definition/english/governance?q=governance accessed 11 February 2020.
[22] Marius Buchmann, 'The Need for Competition between Decentralized Governance Approaches for Data Exchange in Smart Electricity Grids—Fiscal Federalism vs. Polycentric Governance', *Journal of Economic Behavior & Organization* 139 (1 July 2017): 106–17, https://doi.org/10.1016/j.jebo.2017.05.011.
[23] Christine Brandstätt et al., 'Balancing between Competition and Coordination in Smart Grids - a Common Information Platform (CIP)', *Economics of Energy & Environmental Policy* 6, no. 1 (2017), http://dx.doi.org.kuleuven.ezproxy.kuleuven.be/10.5547/2160-5890.6.1.cbra

"a new task in the electricity supply chain".[24] For this reason, data but also information and communication technology more generally were described as "the key infrastructure [...] in smart grids". These transformations triggered new questions on the role of data and on the institutional and organisational aspects thereto.[25]

According to the European Commission's Impact Assessment for the adoption of the Electricity Directive in 2019,[26] electricity data management constitutes a market entry barrier. Electricity data are data of the final electricity customer and include (smart and conventional) metering and consumption data as well as data required for customer switching, demand response and other services.[27] Data management is described in the Impact Assessment as comprising the processes by which data are sourced, validated, stored, protected and processed and by which they can be accessed by suppliers or customers. With the purposes to make existing markets more contestable and to enable the creation of new products and services, the Electricity Directive adopted in 2019 regulates the conditions in which a range of third parties ("eligible parties") can access and use electricity data stemming from data holders ('DSOs' or 'TSOs'). Data holders shall provide electricity data under transparent, fair, reasonable and non-discriminatory conditions ('FRAND') to eligible parties. Further interoperability requirements shall also be adopted by the European Commission, as facilitating technical measures. The Electricity Directive, in its final version, refrains from regulating the "data management model". It remains therefore within the jurisdiction of the Member States to "organise the management of data in order to ensure efficient data access and exchange". As a matter of fact, a study of the Council of European Energy Regulator ('CEER') issued in 2016 showed a clear trend towards centralisation of electricity data management amongst Member States.[28] Yet, many options exist.

First, and notwithstanding the competence of Member States to regulate data management models, the Electricity Directive goes beyond mere data sharing obligations and lays down requirements applying to the data management operator, who shall either be supervised by the competent authority or "authorised and certified".[29] When the data manager is a vertically integrated DSO dealing with smart meters data, additional 'compliance program' obligations apply to the internal processing of the company. They are copied from the independence requirements applying to electricity distribution activities, with a view to ensure that discriminatory conduct is excluded, that impartiality is ensured and that observance with such obligations is adequately monitored within the company.[30] Such an option is inspired by the model of the 'DSO as neutral market facilitator'.[31]

Secondly, the Impact Assessment considered a further-reaching option, where data management would be operated by an 'independent central data hub', namely a third party as a market facilitator interacting with different smart grid stakeholders and aggregating data from them.[32] Such an independent platform would ensure impartiality vis-à-vis new entrants and thereby ensure the existence of a level playing field for the access to data, subject to regulatory oversight. The European Commission further notes that the existence of a central player would ease legal enforcement, while also reckoning that its creation is likely to be costly and time-consuming, especially for TSOs and DSOs.

Thirdly, the so-called market-based approach builds on standardised interfaces installed with each consumer, that allow storing and accessing the data locally ('Data Access Point Manager' option).[33] Such a commercial role is played by companies acting as data gatekeepers, providing data access to stakeholders. The Data Access Point is close to the relevant device (eg. the smart meters), so that this option is a decentralised one. In contrast, there is no central handling of data in such option.[34] This option easily enables consumers to make choices on their preferences as for the (re)use of data relating to them.

Fourthly, Brandstätt and al. suggest yet another governance option, the 'Common Information Platform ('CIP')'. The CIP constitutes a collaborative governance of data management activities by interested stakeholders, including, horizontally, network operators to prevent fragmentation. The authors hold that such a collaborative governance of data management activities would best allow to balance between competition and coordination objectives that are ascribed to data. Taking into account the history of network industries regulation, a CIP-based approach would allow to avoid discrimination in the access to data by third parties, by including them as stakeholders in the governance mechanisms. On the other hand, the CIP would not stumble over weak coordination challenges faced by unbundled or independent operators since it would *not unbundle the smart systems itself*, but merely the decision-making process, to which stakeholders would be associated. Subject to reliable decision-making mechanisms in place, a collaborative governance approach could mitigate the risk of anticompetitive behaviours of monopolies. With respect to consumer protection and personal data protection, the representativeness of consumers and data subjects in the CIP could be a means to collectively empower them.

4. (In-)vehicle data governance

Road vehicles are increasingly becoming connected devices. They produce a wealth of data, expected to feed the creation of new and personalised services and products and to optimise existing business models in the whole automotive value chain. On the flip side, some of the data could constitute an essential facility for some actors in the automotive sector, such as independent repairers, in the sense that denial of access would prevent them from operating in the maintenance markets. An interest in in-vehicle data and resources has indeed been expressed by repairers and maintainers, parts producers, distributors, but also insurers, entertainment service providers, navigation providers, road authorities and others.[35] OEMs are

[24] Marius Buchmann, 'Governance of Data and Information Management in Smart Distribution Grids: Increase Efficiency by Balancing Coordination and Competition', *Utilities Policy* 44 (1 February 2017): 63–72, https://doi.org/10.1016/j.jup.2017.01.003.

[25] Tijs van den Broek and Anne Fleur van Veenstra, 'Governance of Big Data Collaborations: How to Balance Regulatory Compliance and Disruptive Innovation', *Technological Forecasting and Social Change* 129 (1 April 2018): 330–38, https://doi.org/10.1016/j.techfore.2017.09.040; Buchmann (n 22).

[26] Commission Staff Working Document Impact Assessment Accompanying the document Proposal for a Directive of the European Parliament and of the Council on common rules for the internal market in electricity (recast) [...], SWD/2016/0410 final – 2016/0379 (COD).

[27] Electricity Directive, Art. 23 (1).

[28] Council of European Energy Regulation (CEER), Review of Current and Future Data Management Models CEER report Ref: C16-RMF-89-03, 2016, available here: https://www.ceer.eu/documents/104400/-/-/1fbc8e21-2502-c6c8-7017-a6df5652d20b (last visited 27th April 2020).

[29] Electricity Directive, Art. 23 (4).

[30] Electricity Directive, Art. 34.

[31] Smart Grid Task Force – EG3 Report: EG3 First Year Report: Options on handling Smart Grids Data, 2013, <https://ec.europa.eu/energy/sites/ener/files/documents/xpert_group3_first_year_report.pdf> accessed 30 April 2020, 8-9.

[32] Ibid, 10-11.

[33] Brandstätt et al., (n 23).

[34] Smart Grid Task Force (n 31) 12-13.

[35] M McCarthy et al., 'Access to In-Vehicle Data and Resources', Publications

tempted to secure the centralisation of vehicle data by implementing the so-called 'extended vehicle' model, in which data from all vehicles of the same brand are directly transmitted to a proprietary back-end server of theirs, where they could possibly be made available to third parties.[36] OEMs argue that such a closed system would be necessary to ensure safety and (cyber)security of data and vehicles, by preventing third parties' applications to enter the vehicle system directly. As a result, vehicle data are *de facto* held by OEMs, who enjoy an exclusive access and control over such resources[37] - some even talk about a form of technological 'ownership'.[38] A broad consensus was therefore formed around the idea that vehicle data shall be shared to a range of actors in the automotive industry or even possibly to actors outside the sector (e.g. to feed infotainment services operators),[39] in order to prevent anti-competitive behaviours from OEMs and to boost innovation.

In order to ensure fair and undistorted competition between independent operators and authorised dealers and repairers, EU Regulation 715/2017 does already provide OEMs with data sharing obligations to the benefit of independent operators with respect to vehicle repair and maintenance information. Data sharing obligations are based on 'FRAND' conditions, and especially non-discrimination between authorised dealers and repairers on the one hand, and independent operators on the other. They are accompanied by requirements regarding data format as well as the channel by which data shall be made available for reuse (through websites[40] and the 'On-Board Diagnostic' ('OBD') system amounting to a quasi-open technical standard for access and data interoperability).[41] Adopted prior to the arrival of digital and real-time car data,[42] Regulation 715/2017 is however limited in scope, both in terms of data categories and resources and in terms of beneficiaries, and has been outpaced by technological progress. OEMs are now, again, in a position to foreclose adjacent markets and prevent data from being broadly reused, which would call for further anticipatory regulatory initiatives.[43]

It has been clear from the outset that extending data sharing obligations falling on OEMs shall be balanced with other – possibly contradictory - parameters, such as safety and cybersecurity of vehicles, the risk of extending the liability exposure of the OEMs, the need to secure return on investment made by OEMs and the need for consumer protection.[44] Importantly, individuals (drivers and/or holders of nomadic devices) shall be protected with respect to the processing of their personal data. A consensus emerged that they should be given the opportunity to consent prior to any re-use of personal data. Although no major regulatory action has been taken so far, there have been significant discussions. In this context, the "extended vehicle" data model has been contrasted with alternative ones, accompanied by a large number of options and sub-categories. The names of the models are not uniformly used and keep evolving, which adds another layer of complexity.

To simplify and give a taste of the discussion, the "on-board application platform" model provides access to vehicle data and the execution of (third parties') applications inside the vehicle environment, either based on vehicle embedded systems or not. In turn, the "In-vehicle interface" model consists in an upgraded OBD interface inside the vehicle. While data would be directly accessible via the OBD interface, applications would remain outside the vehicle.[45] Both options are criticised (especially by OEMs) for not providing sufficient security assurance. They would also lack operational maturity, when it comes to real-time data provision.[46] Save the implementation of specific (regulatory) safeguards, the in-vehicle interface model could also prevent OEMs from exploiting their control of the data to reward their investment, which could remove their incentive to keep developing the necessary technical solutions.[47]

While the "extended vehicle" model put for by OEMs has been criticised for allowing them to retain exclusive control over data stored and processed in their back-end server, other technical solutions propose to retain the back-end server option but to have it controlled by other entities. In the "shared server" model, the back-end server would be controlled by a consortium of stakeholders, beyond the sole OEMs, with equivalent link to the vehicle. In turn, the "B2B marketplace" model (also called "commercial platform provider" or "neutral server provider")[48] would consist in creating an additional layer between the vehicle and the service providers, fed by the OEMs back-end servers but maintained by a service provider who would facilitate access by the market (such as Google or IBM).[49] As evaluated by Martens and Mueller-Langer, such a model could generate efficiency gains from economies of scale and scope in data collection across car brands, and by incurring the high fixed cost of setting up a data platform. This model would also facilitate the adoption of standards across brands. On the flip side, they also highlight that such platform would turn into monopolies and may be prone to new anti-competitive behaviours. Whether they would have sufficient room of manoeuver to negotiate with large OEMs as exclusive data providers remains an open question therein.[50]

5. Governing data: Learning from the electricity and automotive sectors

In both cases and with sectoral differences, much of the discussion focusses essentially on the determination of which governance mechanisms shall be established to best regulate data as a resource. This section draws critical lessons from these two cases with respect to the data flow paradigm.

While the existence of governance mechanisms is necessary, there can be a great array of them. In both sectoral cases, the data market - as data governance mechanism underpinning the data flow paradigm – appears to constitute (only) one of the available options, whose respective benefits and drawbacks are assessed against the context-specific objectives and constraints at stake. The above sections provide neither an exhaustive overview of all objectives and constraints nor their impact on the assessment of the various data governance mechanisms. Yet, several of them come to light, such as the data protection law, reliability, safety and (cyber)security considerations, 'time to market' of technical tools, the need to ensure a

Office of the European Union, 2017, 29.

36 Kerber (n 15) 311.

37 Ibid.

38 Cynthia Delronge and Alain Strowel, 'Data Sharing For a Smarter Mobility and For Connected Vehicles: How the Design of the Data Flows Contributes (or Not) to Transport Policy and Innovation', in *Des Véhicules Autonomes à l'intelligence Artificielle - Droit, Politique et Éthique*, Christophe Lazaro, Alain Strowel (Bruxelles: Larcier, 2020), 200–201.

39 European Commission (n 14).

40 Regulation (EC) No. 715/2007 (n 11).

41 Martens and Mueller-Langer (n 10) 11.

42 Ibid.

43 Delronge and Strowel (n 38).

44 McCarthy et al., (n 35) 9.

45 Ibid 43–45.

46 Ibid 43–45.

47 Ibid (n 35) 27.

48 Ibid (n 35) 47.

49 Ibid (n 35) 6.

50 Martens and Mueller-Langer(n 10).

return on the investment made by the incumbent data holder, fair and undistorted markets at all levels, innovation as an objective, the need to ensure that the making available of data does not affect the original business of the incumbent data holder, the need for coordination of stakeholders, etc.

Although with obvious differences, the on-going discussions in both the electricity and the automotive sectors display striking similarities with respect to the considered governance mechanisms. For example, the CIP proposal in the electricity sector and the 'shared server model' in the automotive one seem to have in common that a range of pre-determined stakeholders, although not the exact same categories, would jointly make decisions about the resources at stake. In both cases, this option is justified by the need to empower (deemed) weaker parties, particularly independent operators and new entrants in both cases. The CIP adds to that representatives of individuals in their quality as customers and data subjects, which does not seem to be present in the shared server model, mostly viewed as an industrial consortium. Both the CIP and the shared server model are expected to preserve against monopole and/or monopolisation of the resources, by bringing together both big and small players.

In the same vein, the 'independent central data hub' option in the electricity sector and the 'B2B marketplace' in the automotive one do share similarities. They both consist in the deliberate (regulatory?) creation of a new data platform layer in the value chain operated by an independent player. Such an operator would assume a new monopolist role, with a view to facilitate the relationships between data providers on the one hand (mainly DSOs and TSOs in the electricity sector and OEMs in the automotive one) and data customers on the other. In both cases, the creation of such a central player is motivated by the need to ensure non-discrimination and impartiality vis-à-vis the activities conducted by the data provider (electricity distribution in the electricity sector and vehicle manufacturing in the automotive one), and therefore fair and undistorted markets. The creation of such a new data platform is expected to be resource- and time-consuming. By creating a new layer between data providers and data customers, it could also create transaction costs, following observations on the creation of monopolist physical infrastructure managers in some liberalised industries. Such governance option could take advantage of economies of scale and scope and could facilitate the adoption of standards, as a result of the monopolisation of the activity. Ironically, the creation of a central player to fight anticompetitive behaviours of incumbent data holders may, in turn, raise competition law issues.

Several legal and regulatory conclusions can be drawn from the analysis of the two sectoral examples. First, the study of the selected data governance mechanisms in both sectors shows a clear concern for the economic environment of data, *beyond the sole data market and data transaction phase*, to the sector value chain more broadly. The data governance mechanisms are evaluated, *inter alia*, against their ability to empower deemed weaker parties, such as new entrants, consumers and data subjects. The specific risks of 'platformisation' of data intermediation is somehow accounted for, namely, in the parlance of Montero and Finger, the restructuring around the business model of online platforms, which can imply substitution and commoditisation of traditional activities demoted to a mere side of the platform.[51] This is especially so as data-driven online markets were found to nearly always tip, moving "towards monopoly" based on data network effects.[52] It is all the more so that, in both cases, substantial *advantages* can also simultaneously be derived from the aggregation of data across brand (of TSOs and DSOs in the electricity sector and of OEMs in the automotive one), or at least from the possibility to have a comprehensive governance of them across brands, such as better coordination. The independent data platform option would anticipate and 'embrace' such platformisation. For its part, the CIP or shared server model would aim at preventing monopolist platformisation from happening. This meets a more general statement made by Lundqvist. Taking into account the network effects of data, as already observed in data-driven online markets, collaborative governance mechanisms (such as 'data pools') could mitigate the risk of monopolisation since *all relevant stakeholders* participate in the same arrangement.[53]

Second, while, in the data flow paradigm, the regulatory focus is mainly placed on data as a subject-matter, it is never solely about data as a resource. To some extent, it is also about data management as a set of data activities and, specifically in the automotive sector, about the underlying technologies, whether servers, platforms or interfaces. As a technological asset, data are indeed not standalone but remain highly reliant on their technological environment. As underlined by Delronge and Strowel, it is the control over the technology which enables some well-placed stakeholders to retain a form of *de facto* ownership, exemplified by the use of brand-specific back-end servers by OEMs in the automotive sector.[54] Or, in the parlance of Lessig, "code is law".[55] In turn, regulating the access and control over the server *as a means to arrange access and control over data* is an illustration of the phenomenon, described by Lessig, where the law is designed to have an indirect effect, by leveraging "code" or the technological architecture as another "modality of regulation".[56] While striking, it should therefore not surprise us that, in the automotive sector, much of the discussion on the governance of data consists in a technical discussion on the supporting technologies thereto.

Besides, many of the other governance mechanisms would require to partly shift - or *extend* – the regulatory focus to the *stakeholders*, whether an independent data platform or the decision-making rules for a consortium of stakeholders in the above examples, to establish them and/or to *regulate their operation*. The independent data platform model comes with obvious risks of anti-competitive behaviour, which could require *ex ante* regulatory intervention beyond the sole operation of competition law. Much of the regulatory 'pressure' would similarly shift to the CIP or shared server model. In order to ensure that all relevant stakeholders take part, they could for instance be mandated by law to participate, inspired by the "open data pool" model described by Lundqvist.[57] It would remain to be seen whether the legislator should further intervene with respect to the decision-making process, for example to re-balance power asymmetries between stakeholders or to prohibit certain data processing activities (eg. to protect data subjects and consumers).

Finally and to wrap up, the study of data governance mechanisms in the electricity and automotive sectors challenges the implicit assump-

[51] Juan J Montero and Matthias Finger, 'Platformed! Network Industries and the New Digital Paradigm' [2018] *Competition and Regulation in Network Industries* 1783591718782310.

[52] Jens Prüfer and Christoph Schottmüller, 'Competing with Big Data', Discussion Paper, Tilburg Law and Economics Center (TILEC) *Law and Economics Research Paper Series* (Tilburg: Tilburg University, 2017) 1.

[53] Bjorn Lundqvist, 'Competition and Data Pools', *Journal of European Consumer and Market Law* 7, no. 4 (14 August 2018): 146–54.

[54] Delronge and Strowel (n 38) 198.

[55] Lawrence Lessig, 'The Law of the Horse: What Cyberlaw Might Teach', *Harvard Law Review* 113, no. 2 (1999): 501–549.

[56] Ibid.

[57] Lundqvist (n 53).

tion of a naturalness of the data flow paradigm. It also illustrates the importance of having a regulatory purpose. Viewing data and the market for such data as the regulatory target in the data flow paradigm seems to bear the implicit idea that there *should* be well-operating such markets, possibly by the operation of the law, and that *they alone* would deliver the grand policy expectations, such as 'AI' and 'data-driven innovations'. The data flow paradigm seems to detach the data transaction phase from the technological and economic environment of data. As a result, the policy objectives linked to the data flow paradigm seem both imprecise, short-sighted, and not context-specific enough. Fostering data exchange is not an end in itself and should thus be regarded with respect to the sectoral objectives and constraints, sometimes contradictory to each other. To be clear, this conclusion should not be interpreted as pleading against any form of horizontal 'data law' which could particularly be necessary to democratically determine *who* has legitimate entitlements on data (or 'data rights').[58]

6. Conclusion: brand new, same old song, or somewhere in between?

While it is contended here that the (sectoral) context, in terms of both objectives and constraints, shall be taken into account when regulating data as a resource, this should not be interpreted as an obstacle to knowledge, action and improvement of how data could be governed. Based on the study of the electricity and automotive sectors, this concluding section opens avenues for further research and regulatory intervention.

However new they may be, it is striking that the quest for appropriate mechanisms to govern data often leads to rediscovering old concepts, as can be observed in the electricity and automotive sectors. The independent data platform, as data intermediary, coordinates data demand and offer. A quick look back at recent history shows that online platforms have emerged in environments characterized by fragmentation, where they offer new types of data-driven aggregation and intermediation. Such scenarios have for example been observed in the context of network industries characterised by large number of actors in freshly liberalised environments.[59] Subject to both vertical unbundling and decentralisation of supply, the electricity sector is obviously a prominent illustration thereof. The scholarship also began to observe the emergence of data platform intermediaries in the data sharing economy or data marketplaces.[60] The independent data platform model does not take away the markets for data, but it structures them by adding a layer in the vertical value chain. The creation of this new layer can be compared to the creation of independent managers of physical infrastructure as a result of the liberalisation of network industries, such as in the railways or the aviation sectors. Taking the vertical unbundling mechanism to the extreme, it results in the creation of both a new market and a new product, namely train paths and airport slots in the railways and in aviation. The independent data platform model goes however a step further. As a platform, it brings coordination in both the data demand side *and the data offer side*, by bringing together various brands of data producers. There can of course be a variety of options for the independent data platform. For instance, whether the data platform would pool the data or whether it would merely facilitate the data transaction constitutes a crucial question. Whether such independent data platforms would be established by law or not, the regulation of their operation remains an important question, which could be informed by on-going discussions on the regulation of online platforms. Particularly in sectors (such as electricity) characterised by public service activities, it cannot be excluded that the independent data platform could be viewed – and regulated - as a novel form of (data) utility.

For their part, the CIP and the shared server model could be akin to commons, as defined by Ostrom in 1990, in the sense that they amount to "institutionalised arrangements of community management or governance of shared resources".[61] A reservation should however be made regarding the CIP, which is portrayed as a decision-making body without actual sharing of the resources at stake, namely the data. In any case, a commons-like model is viewed, in both situations, as a means to accommodate the competing – and sometimes contradictory – needs of the various stakeholders, subject to decision-making arrangements between them. As a matter of fact, 'data commons' have recently gained traction as a form of collaborative governance mechanism to govern data in many instances. Just like in the electricity and automotive examples, they are often advocated for as a means to counterbalance power asymmetries in data environments, such as with online platforms like Facebook[62] or in the Smart Farming industry.[63] Much can therefore be learned from other 'commoning' experiences and, from a regulatory perspective, on how the law can support the establishment or even the operation of such governance mechanisms.

This calls for a empiricist and pragmatic perspective, following the work of Ostrom with the institutional analysis and development framework, and then by Frischmann, Madison and Strandburg with their Governing Knowledge Commons framework.[64] Data governance concerns have (re)surfaced with technological developments, which have multiplied the value of – and thus the greed for – data and have prompted governments to enhance data (re)use, in expectation of innovation and growth benefits. Many factors are found to have an influence on the respective fitness of governance mechanisms in a given context, as outlined in the electricity and automotive sectors. Gathering and analysing these factors can certainly inform the governance of data in other situations. Such an exercise is beginning to be carried out in the scholarship. For instance, Van den Broek and Van Veestra showed that compliance with data protection is of great concern for participants of what they call "big data inter-organisation collaborations" (or data pools). Their empirical research finds that the presence of personal data has an impact on the design of the governance mechanisms, and results in more hierarchical control in the collaboration.[65] To begin with, the European Commission could be well advised to launch an observatory, just like for other topics.[66]

[58] On this question, see also the on-going work of ALI-ELI on the "Principles for a Data Economy" (n 3).

[59] Montero and Finger (n 51).

[60] Heiko Richter and Peter R. Slowinski, 'The Data Sharing Economy: On the Emergence of New Intermediaries', *IIC - International Review of Intellectual Property and Competition Law* 50, no. 1 (1 January 2019): 4–29, https://doi.org/10.1007/s40319-018-00777-7.

[61] Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, The Political Economy of Institutions and Decisions (Cambridge ; New York: Cambridge University Press, 1990); Jennifer Shkabatur, 'The Global Commons of Data', *Stanford Technology Law Review* 22, no. 1 (2019): 354–411.

[62] Shkabatur (n 61).

[63] Jeremiah Baarbé, Meghan B, and Jeremy de Beer, 'A Data Commons for Food Security', *Proceedings of the 2017 IASC Conference* ; Open AIR Working Paper No. 7/17 (Rochester, NY: Social Science Research Network, 2017).

[64] Brett M. Frischmann, Michael J. Madison, and Katherine J. Strandburg, eds., *Governing Knowledge Commons* (Oxford, New York: Oxford University Press, 2014).

[65] van den Broek and van Veenstra (n 25).

[66] To remain in the digital economy, the European Commission launched for instance the EU Blockchain Observatory and Forum in 2018 https://www.

The observatory could map existing or considered data governance mechanisms[67] and analyse the contextual factors for their success or failure. The outcome would be valuable for researchers, players in the field as well as policy- and law-makers alike.

Telling from its Communication 'A European Strategy for Data', the European Commission appears to be embracing data governance mechanisms, beyond the sole data flow paradigm, as measures to share and govern data, account being had to their (sectoral) environment.[68] The Communication significantly refers to 'data cooperatives', 'data pools', 'data trusts' as data governance mechanisms. The Communication reckons the need for "organisational approaches and structures (both public and private)". It is based on a seeming attempt to balance between horizontal and context-specific regulation of data that the European Commission commits to regulate the governance of 'common European data spaces' in the coming months. The Communication includes an Appendix listing the common European data spaces in "strategic sectors and domains of public interest" where the EU shall therefore be specifically involved. The automotive industry is indicated as part of the 'Common European mobility data space'. The Communication does not expressly anticipate regulation of data governance, but refers to the on-going review of the current EU type-approval legislation for motor vehicles, in order to "open it up to more car data based services" by early 2021. According to the Communication, the review shall look at "how data is made accessible by the car manufacturer, what procedures are necessary to obtain it in full compliance with data protection rules and the role and rights of the car owner".[69] The electricity sector makes part of the 'common European energy data space'. While the Communication confirms that "the specific governance frameworks" shall be defined at national level, the European Commission will further regulate interoperability requirements, as laid down in the Electricity Directive. The concern of the European Commission for contextual data governance mechanisms can be analysed as a move beyond the data flow paradigm and shall be welcomed positively.

eublockchainforum.eu/about accessed 11 May 2020, and a group of experts for the Observatory on the Online Platform Economy, launched also in 2018 https://platformobservatory.eu/about-observatory/introduction accessed 11 May 2020.

67 Data governance classifications are already being elaborated, based on concrete illustrations, although with different angles and scope and with no uniform taxonomy being used. See for instance Gov Lab with respect to DATA COLLABORATIVES https://datacollaboratives.org accessed 11 May 2020, or the OPEN DATA INSTITUTE https://theodi.org accessed 11 May 2020.

68 European Commission, Communication 'A European strategy for data', COM(2020) 66 final, 19.2.2020.

69 Ibid, 27-28.