Ownership of Data: Four Recommendations for Future Research

K.K.E.C.T. (Koen) Swinnen*

This Article makes four recommendations for ongoing and future research about data ownership. The essence of these recommendations is that we need to know what we are talking about before we can even think of trying to answer the question whether data ownership should be recognized. What do we mean by ownership? And are we talking about information, data, digital data, data files, or data carriers? The first and second recommendations assert that lawyers need to be precise about the meaning and the possible object of ownership. Lawyers also need to cooperate closely with IT-specialists in order to know what is out there in the digital word – which is this Article's third recommendation. The fourth recommendation holds that creditors of digital data owners must also be considered and treated as stakeholders in the debate on recognizing data ownership.

* Assistant Professor Property and Insolvency Law, Erasmus School of Law (Rotterdam). This Article builds on a previous article by the author, which was published (in Dutch) in the Belgian Tijdschrift voor Privaatrecht in 2019: K. Swinnen, 'Eigendom van data? Reculer pour mieux sauter' [2019] TPR 63, 106.

Table of Contents

I. Introduction 141

II. First Recommendation: Be Precise about What You Mean by Ownership 146

A. Heterogeneity in the Literature 146
B. Property Law Ownership, Intellectual Property Right, or Sui Generis Right? 148
1. Start From the Goals 148
2. Some Pros and Cons of Property Law Ownership ... 149
3. Some Pros and Cons of Intellectual Property 150
4. Some Pros and Cons of a Right Sui Generis 152

III. Second Recommendation: Be Precise about the Object of Ownership 154

A. Information, Data, Digital Data, Data Files, and Data Carriers 155
B. Semantic, Syntactic, and Structural Information 156
1. Introduction 156
2. Property Law Ownership of Semantic, Syntactic, and Structural Information 158
3. An Intellectual Property Right in Semantic, Syntactic, and Structural Information 164

IV. Third Recommendation: Cooperate Closely with IT Specialists 165

V. Fourth Recommendation: Include Creditors in the List of Stakeholders 167

A. Data Producers, (Commercial) Data Users, and Data Subjects 167
B. Creditors of Data Owners 170

VI. Conclusion 174

I. Introduction

Who owns digital data? In both the Netherlands and Belgium, the answer to this question is very short: no one. Digital data do not fit in these countries' property law, which is limited to physical objects and patrimonial rights,[1] such as claims and property rights (e.g., usufruct). As a result, only physical objects and patrimonial rights—together called goods—can be owned, leaving out digital data, which fall under neither of these categories.[2]

Whereas digital data do not exist from a property law point of view, at least in the Netherlands and Belgium, their omnipresence in today's social, financial, and economic life cannot be denied. In her speech at the 2018 Davos World Economic Forum, the German Chancellor Angela Merkel called data "the raw material of the 21st century."[3] In 2012, Neelie Kroes, the then-EU commissioner

---

[1] In article 3:6 of the Dutch Civil Code patrimonial rights (*vermogensrechten* in Dutch) are defined as "rights which, either separately or together with another right, are transferrable, or which intend to give its proprietor material benefit or which are obtained in exchange for supplied or the prospect of still to supply material benefit." (translation taken from *Dutch Civil Law* <http://www.dutchcivillaw.com> accessed 24 February 2020).

[2] For Dutch law, see among others: Eric Tjong Tjin Tai, 'Privaatrecht Voor de Homo Digitalis: Eigendom, Gebruik en Handhaving' in Nederlandse Juristen-Vereniging, *Homo Digitalis* (Wolters Kluwer 2016); Nicole van den Heuvel, 'Beslag op data' [2016] WPNR 437, 437; Reinout Wibier, 'Big Data en Goederenrecht. Een Analyse van de Plaats van Big Data in Ons Goederenrecht' [2016] WPNR 427, 431-432; Emil Verheul, 'Revindicatie van Data in de Cloud' [2018] Ars Aequi 578, 581; Koen Swinnen, 'De Inpassing van Digitale Producten in het Belgisch Privaatrecht' [2018] TPR 1021, 1027-1030; Francine Ruitinga, 'Big Data: Vatbaar Voor (Faillissements) Beslag?' [2019] MvV 197, 198. For Belgian law, see Swinnen (n *) 68.

[3] Angela Merkel, 'Speech' (World Economic Forum Annual Meeting, Davos, 24 January 2018) <http://www.bundeskanzlerin.de/Content/EN/Reden/2018/2018-01-24-bk-merkel-davos_en.html> accessed 20 January 2020.

responsible for the digital agenda, had already called data "the new oil,"[4] and on its May 6, 2017 cover, *The Economist* called data "[t]he world's most valuable resource."[5]

These designations are not idle talk, as some numbers demonstrate. According to the European Data Market report,[6] issued by the European Commission in 2017, the 2016 overall value of the European data market, defined as "the marketplace where digital data is exchanged as 'product' or 'services' as a result of the elaboration of raw data,"[7] was nearly €60 billion.[8] The value of the European Data Economy, which comprises the data market and the impact it has on the European economy as a whole,[9] was estimated at over €300 billion.[10] There were 6.1 million so-called "data workers" in the European Union in 2016, a number projected to grow to nearly 10.5 million in 2020.[11] Data workers are "workers who collect, store, manage and analyze data as their primary, or as a relevant part of their activity."[12] These numbers refer to the European Union only, which is not the world's biggest data player. In 2016, the American Data Market was worth €129 billion,[13] which is more than twice the European Union's €60 billion.

---

[4] Neelie Kroes, 'Data is the New Gold.' (Press Conference on Open Data Strategy—Opening Remarks, Brussels, 12 December 2011) <http://europa.eu/rapid/press-release_SPEECH-11-872_en.htm> accessed 20 January 2020.
[5] 'The World's Most Valuable Resource is No Longer Oil, but Data' *The Economist* (London, 6 May 2017).
[6] IDC and Open Evidence, 'European Data Market. SMART 2013/0063. Final report' [2017] <http://datalandscape.eu/study-reports/european-data-market-study-final-report> accessed 20 January 2020.
[7] IDC and Open Evidence (n 6) 25.
[8] IDC and Open Evidence (n 6) 110.
[9] IDC and Open Evidence (n 6) 25.
[10] IDC and Open Evidence (n 6) 126.
[11] IDC and Open Evidence (n 6) 62.
[12] IDC and Open Evidence (n 6) 24.
[13] IDC and Open Evidence (n 6) 175.

For a large and ever-growing number of companies, digital data have become valuable and indispensable assets that enable the companies to optimize their production processes, to improve their products, to pick up on trends, to send personalized offers to customers, etc. A term legal scholars often use to refer to this evolution of digital data into valuable, even indispensable (business) assets and commodities, which are often traded between companies,[14] is the "commodification" of (digital) data.[15]

Another term that often surfaces with regard to digital data is "de facto ownership."[16] This term refers to how control over digital data

---

[14] See, e.g., Herbert Zech, 'Industrie 4.0 – Rechtsrahmen für eine Datenwirtschaft im digitalen Binnenmarkt' [2015] GRUR 1151, 1152; Jutta Stender-Vorwachs and Hans Steege, 'Wem gehören unsere Daten? Zivilrechtliche Analyse zur Notwendigkeit eines dinglichen Eigentums an Daten, der Datenzuordnung und des Datenzugangs' [2018] Neue Juristische Online-Zeitschriftt 1361, 1363.

[15] See, e.g., Pamela Samuelson, 'Privacy as Intellectual Property' [2000] Stan L Rev 1125, 1134; Paula Baron, 'Databases and the Commodification of Information' [2001-02] J Copyright Soc'y USA 131; Jacqueline Lipton, 'Information Wants to be Property: Legal Commodification of E-commerce Assets' [2002] Intl Rev L, Computers & Technology 53, 53-66; Paul M. Schwartz, 'Property, Privacy and Personal Data' [2003-04] Harvard L Rev 2056, 2059; Corien Prins, 'When Personal Data, Behavior and Virtual Identities Become a Commodity: Would a Property Rights Approach Matter' [2006] SCRIPT-ed 271, 272, 276; Peter Fleissner, 'The Commodification of Knowledge in the Global Information Society' [2009] triple C 228, 234 <https://www.triple-c.at/index.php/tripleC/article/view/115> accessed 20 January 2020; Nadezhda Purtova, 'Property rights in personal data: Learning from the American discourse' [2009] Computer L & Security Rev 507, 507.

[16] See, e.g., Wolfgang Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' [2016] GRUR Int. 989, 990; Nestor Duch-Brown, Bertin Martens and Frank Mueller-Langer, 'JRC Digital Economy Working Paper 2017-01. The economics of ownership, access and trade in digital data' [2017] JRC Technical Reports 18, 23 <http://ec.europa.eu/jrc/sites/jrcsh/files/jrc104756.pdf> accessed 20 January 2020; Bernt Hugenholtz, 'Against Data Property. Data Property: Unwelcome Guest in the House of IP' (2017) Institute for Information Law (IViR), 4 <http://pure.uva.nl/ws/files/16856245/Data_property_Muenster.pdf> accessed 20 January 2020. Zech uses the synonym "factual ownership." Herbert Zech, 'Information as Property' [2015] JIPITEC 192, 197. Some authors who write about this phenomenon without explicitly using the term de facto ownership are:

is exercised and governed today. Although digital data do not exist from a property law point of view, in day-to-day commercial and economic life people treat them as if they are goods or, in other words, as if they are owned.[17] Companies exercise exclusive powers over *their* digital data by excluding others from using and accessing them or by granting others access in exchange for money. These exclusive powers are not vested in any particular (property) right but are the result of having control of the digital data. This control stems from being able—and often also being the first—to produce or gather and store and protect the digital data. Specific contract clauses supplement this de facto control by declaring the manufacturer of a product to also be the *owner* of data generated by the product.

The current situation of de facto ownership resembles the first-come, first-served principle and the law of the jungle, where the strongest party—in this case the wealthiest, largest or most technologically advanced party—prevails.

A question that has attracted a great deal of worldwide attention in this regard, from both scholars and policymakers, is whether de facto ownership should be replaced by (some form of) legal ownership. In its "A Digital Single Market Strategy for Europe" communication to the EU Council and Parliament, the EU Commission marked data ownership as one of the "emerging issues."[18] In her speech at the 2018 World Economic Forum Merkel stated: "the question 'who owns that data'? will decide whether democracy, the participatory social model and economic prosperity

---

Tjong Tjin Tai (n 2) 258; Boris Paal and Moritz Henneman, 'Big Data im Recht. Wettbewerbs- und daten(schutz)rechtliche Herausforderungen' [2017] NJW 1697, 1698.

[17] See also, e.g., Kerber (n 16) 991.

[18] European Commission, 'A Digital Single Market Strategy for Europe' (Communication) COM (2015) 192 final, 15.

can be combined."[19] It is impossible to ignore the large and still growing number of studies, articles, and chapters published in several western countries,[20] such as Germany, the United States, England, and the Netherlands.[21]

It is not the goal of this Article to solve the data ownership issue or to answer the question whether de facto ownership of digital data should be replaced by some sort of legal data ownership, because such a question is far from a purely legal question. Instead, this Article aims to further ongoing and future (legal) research about this subject matter by providing scholars and policymakers with four, non-exhaustive guidelines or recommendations for current and future research on data ownership, the bottom line of which is that we need to get the foundations right in order to make progress. Put differently, well begun is half done.

Probably the most important foundations are the very concepts of data and ownership, which are at the core of the first, second, and third recommendations made below. What exactly are we talking about? Are we really talking about data or are we perhaps talking about digital data or data files? And what is actually meant by ownership? Does that term refer to property law ownership or does it rather refer to an intellectual property right in data or perhaps to some kind of sui generis right in data? Besides being clear about the meaning of these concepts, we also need to make sure that no stakeholders are overlooked. Stakeholders are, for the purpose of

---

[19] Angela Merkel, 'Speech' (World Economic Forum Annual Meeting, Davos, 24 January 2018) <http://www.bundeskanzlerin.de/Content/EN/Reden/2018/2018-01-24-bk-merkel-davos_en.html> accessed 20 January 2020.

[20] This Article is based on research into relevant American, Belgian, Dutch, English and German law. It is not unlikely that also in other countries attention is paid to the data ownership issue.

[21] See (amongst others) the studies, articles, and chapters referred to in the footnotes of this Article, and in footnotes 16, 22, 23, 34, 41, and 52 in particular.

this Article, the parties that have a considerable interest in (i.e., would be affected by) the outcome of the currently unfolding debate about data ownership. An important stakeholder group overlooked in the academic literature is the group of creditors of data *owners*, as will be elaborated on below.

Although initially formulated to boost and direct Dutch as well as Belgian research on data ownership, as the latter is still in its infancy, these recommendations could be useful to legal scholars and policymakers everywhere. The focus of the discussion is often on Dutch and Belgian law, particularly the fourth recommendation, but the underlying issues, questions and ideas are *mutatis mutandis* applicable to other legal systems.

II. First Recommendation: Be Precise about What You Mean by Ownership

A. Heterogeneity in the Literature

Literature on data ownership pays considerable attention to the (anticipated) effects of recognizing data ownership. Scholars predominantly focus on how data ownership would impact the data market and the repercussions for protection of personal data and privacy. Because the impact and repercussions will directly depend on the specific powers the right of ownership grants—and does not grant—to its holder as well as on the limitations it imposes on others, we must be clear on what we mean by the term ownership.

Saying that we need to know what we are talking about might come across as obvious, but its relevance should not be underestimated. Scholars give a vast variety of meanings to the word ownership. For instance, some scholars write about intellectual

property rights in digital data.[22] Other scholars write about property law ownership[23] or about, for instance, the rights and powers an EU data subject has under the General Data Protection Regulation,[24] "a bundle of rights, which combines elements of traditional property and intellectual property,"[25] "the exclusive attribution of certain aspects of activities dealing with specific information,"[26] or "*ein eigentumsähnliches Recht an nicht personenbezogenen Daten,*"[27] which

---

[22] See, e.g., Lipton (n 15) 53-66; Josef Drexl, 'Designing competitive markets for industrial data – Between propertisation and access' [2016] Max Planck Institute for Innovation and Competition Research Paper Series No. 16-13, 5, 7, 29, 38 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2862975> accessed 20 January 2020; Wolfgang Kerber, 'Governance of Data: Exclusive Property vs. Access' [2016] IIC 759, 760-761; Kerber (n 16) 990; Andreas Wiebe, 'Protection of industrial data – a new property right for the digital economy' [2017] JIPLP 62, 63-66.

[23] That is particularly the case in the Netherlands and Belgium. See, e.g., Frank Verstijlen, 'Goederenrecht 2.0? Over de plaats van software in het goederenrecht in het licht van UsedSoft' in Egbert Koops, Bart Krans, Evert Neppelenbroek and Albert Verheij (eds), *Digitaal privaatrecht* (BJu 2014); Eric Tjong Tjin Tai, 'Data in het vermogensrecht' [2015] WPNR 993, 995-996; Sjef van Erp and Willem Loof, 'Over digitale inhoud als zaak' in Koninklijke Notariële Beroepsorganisatie, *Boek 5 BW van de toekomst. Over vernieuwingen in het zakenrecht* (Sdu 2016); Wibier (n 2) 430-433; Dick Van Engelen, 'Twee voor de prijs van één. Een markt voor tweedehands software licenties en een nieuw Europees eigendomsrecht op 'bits en bytes'' [2017] NJB 2678, 2680-2681; Swinnen, 'De inpassing van digitale producten in het Belgisch privaatrecht' (n 2) 1027-1030; Verheul (n 2) 581-584; Ruitinga (n 2) 198. There are also German legal scholars writing about property law data ownership. See, e.g., Stender-Vorwachs and Steege (n 14) 1361-1367.

[24] See, e.g., Jacob M. Victor, 'The EU General Data Protection Regulation: Toward a Property Regime for Protecting Data Privacy' [2013] Yale LJ 513, 515. Victor calls the powers that an EU data subject derives from the GDPR, in particular the right to be forgotten (art. 17 GDPR), the right to data portability (art. 20 GDPR), and the fact that the data subject's consent is one of the few bases for the lawful processing of personal data (art. 6 GDPR), "property derived rights." He also states that the EU has created "a property regime in personal data, under which the property entitlement belongs to the data subject."

[25] Vera Bergelson, 'It's Personal but Is It Mine? Toward Property Rights in Personal Information' (2003) 37 UC Davis L Rev 379, 437.

[26] Zech (n 16) 195.

[27] Andreas Wiebe and Nico Schur, 'Ein Recht an Industriellen Daten im verfassungsrechtlichen Spannungsverhältnis zwischen Eigentumsschutz,

can be translated as an ownership-like right in non-personal data. Many of these rights, such as the latter, do not really fall under one of the existing categories of ownership—property law ownership and intellectual property—but should rather be considered sui generis rights.

This heterogeneity of approaches makes it difficult to get a clear overview of the existing body of literature and the possible effects of recognizing data ownership. It makes it equally difficult to draw general conclusions, let alone build a general theory of data ownership. Scholars need to be aware of that, the more so if their research is legal comparative. In fact, scholars should always try to answer the following questions: what exactly does the author whose article I am reading mean by data ownership? And, equally important, what do I mean by data ownership in my own research or article? Hence the first recommendation: be precise about what you mean by data ownership.

B. Property Law Ownership, Intellectual Property Right, or Sui Generis Right?

1. Start From the Goals

When talking about data ownership, there are, roughly speaking, three options as to what the word ownership refers to: property law ownership, an intellectual property right, or a sui generis right. All three are found in the existing body of literature. Depending on the type of ownership one chooses, the effects of introducing data ownership, and as a result also the answer to the question whether data ownership is, could, or should be possible, will differ.

Wettbewerbs- und Informationsfreiheit' [2017] Zeitschrift für Urheber- und Medienrecht 461, 461. See also Zech 'Industrie 4.0 – Rechtsrahmen für eine Datenwirtschaft im digitalen Binnenmarkt' (n 14) 1153.

Therefore, it is essential to start by setting goals with regard to digital data—which should include how badly we want them—and let the choice for a specific type of ownership depend on these goals. The way to proceed is not to figure out what we can do and achieve with regard to digital data using the existing types of ownership, but to think about what we want (and do not want) to achieve with regard to digital data and only then look at how the law, and perhaps a property-like right in particular, can accommodate this. That approach involves assessing the features and pros and cons of each option. The following paragraphs provide a sneak preview of what that could look like.

2. *Some Pros and Cons of Property Law Ownership*

Property law developed with immovable property, in particular land, and later also movable property and claims in mind. By nature, digital data are very different types of assets. Consequently, existing property law rules or principles will likely turn out to be at odds with, or at least not ideal for, the particular nature of digital data, such as the rules on accession[28] and possession, the rules on how ownership of a physical object is transferred,[29] and the rules regarding the assignment of claims. Moreover, rules or principles that are desirable for digital data are likely to be absent.

On the other hand, the existence of a comprehensive set of rules and principles could also be an added advantage of property law ownership. It could be an advantage property law ownership has over both a sui generis right and an intellectual property right,

---

[28] Likewise, Sjef van Erp gives the following example: "We cannot just—to give but one example—apply our traditional property rules concerning mixture of movables to data sets stored in servers as 'big data'." Sjef van Erp, 'New IT technology: Who is a subject, what is an object of which property entitlement?' [2018] European Property L J 2018 145, 146.

[29] See in this regard also Verheul (n 2) 583.

because the choice for either of these rights would require the legislature to design a (whole) new legal framework. Besides being a big job, this bears the risk of ending up with an incomplete legal framework and being faced with teething troubles, to wit implementation, interpretation, and harmonization issues.

Although these issues are likely to occur with property law ownership, the legislature's task will be substantially smaller as there is a comprehensive legal framework it can fall back on. Unless provided otherwise by law, general property law rules will automatically apply to digital data. Some rules that under Dutch law make up this framework, and which can be called default rules, are: the owner can enforce his right against everyone (*erga omnes*); he can demand anyone holding the object of his right (unlawfully) to return it to him (*rei vindicatio*); his right of ownership is not limited in time; after the death of the owner the object is part of the estate; the owner has the power to encumber the object with limited property rights, such as a right of pledge and a right of usufruct; and the creditors of the owner can attach and have the object sold in case of default. These and/or similar rules and principles are likely to be part of the legal framework that we want to apply to digital data anyway, regardless of which type of ownership the choice would fall on (see below).

3. *Some Pros and Cons of Intellectual Property*

In the existing body of literature, the creation of an intellectual property right in data gets considerable attention. The majority of scholars seems to be, sometimes fiercely, opposed to the idea of introducing a new (special) intellectual property right in data.[30] To

[30] See in particular: Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 992-998; Kerber, 'Governance of Data: Exclusive Property vs. Access' (n 22) 761; Hugenholtz (n 16) 1-17.

support their view, these scholars usually focus on the potential negative consequences of the introduction of an intellectual property right in data or on the fact that intellectual property law is not the obvious means, not to say unfit, to solve the data ownership issue. There are, however, also scholars who write about and reflect on the idea of introducing an intellectual property right without declaring themselves openly against or in favor of that idea (yet).[31]

The role intellectual property law can play to solve the current data ownership issue seems to be limited because of the specific nature and raison d'être of intellectual property rights, which is the protection of products of the human mind or intellectual creations. As long as digital data are products of the human mind such as software, emails, and all kinds of digital text files, there is no problem. However, not all digital data meet this requirement. That is particularly true for so-called machine-generated data, the economic value and number of which are enormous and will only further increase.[32] Machine-generated data are data "created without the direct intervention of a human by computer processes, applications or services, or by sensors processing information received from equipment, software or machinery, whether virtual or

---

[31] See for instance Emil Verheul, who writes that if we want to subject data to someone's exclusive (legal) control, we should have a look at intellectual property law and its underlying goals (instead of at property law ownership). If, however, the main goal is to allow someone to revendicate his data, the best solution, according to Verheul, is to simply include such a power in the law (as an intellectual property right, such as copyright, usually does not grant a right of recovery). Verheul (n 2) 585. See also Wiebe, who concludes: "However, it is too early for a final evaluation." Wiebe (n 22) 70.

[32] For a discussion of the enormous economic value and increasing relevance of machine generated data, see e.g., Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 990-991; Hugenholtz (n 16) 3-4; Peter K. Yu, 'Data Producer's Right and the Protection of Machine-Generated Data' [2019] Tul L Rev 859, 886-887. Herbert Zech writes: "[…] the production of information (especially data) without creativity is of increasing economic importance." Zech (n 16) 193.

real."[33] The only human intervention in the creation of these digital data consists of switching on the computer or pushing the start button. Clearly the digital data that are thereby generated are not creations from the human intellect. As a result, they fall outside the scope of intellectual property law,[34] unless we decide to lower the bar (substantially) and devise a new intellectual property right that protects the mere fact that one has somehow contributed to the creation of digital data. That, however, would have nothing to do with intellectual property and its raison d'être.

4. *Some Pros and Cons of a Right Sui Generis*

The main benefit of choosing to devise a completely new right in digital data, a right sui generis, is that the legislature can start from a clean slate. Leaving aside some exceptions, no regard must be had at existing rules and principles, which are galore in property law and also exist in intellectual property. All attention can be fixed on the goals that the legislature wants to achieve with regard to digital data.

---

[33] European Commission, 'Building a European Data Economy' (Communication) COM (2017) 9 final.

[34] See also, among others: Zech 'Industrie 4.0 – Rechtsrahmen für eine Datenwirtschaft im digitalen Binnenmarkt' (n 14) 1152; Kerber, 'Governance of Data: Exclusive Property vs. Access' (n 22) 760; Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 990-991; Osborne Clarke LLP, 'Legal study on Ownership and Access to Data' [2016] EU Publications, 13, <http://publications.europa.eu> accessed 20 January 2020 (with regard to both traditional copyright protection and copyright protection under the Database Directive); Commission, 'The free flow of data and emerging issues of the European data economy' (Staff Working Document) SWD (2017) 2 final; Duch-Brown, Martens and Mueller-Langer (n 16) 13; Hugenholtz (n 16) 4; Anette Gärtner and Kate Brimsted, 'Let's Talk about Data Ownership' [2017] EIPR 461, 461; Paal and Henneman (n 16) 1698; Wiebe (n 22) 64; Jeffrey Ritter and Anna Mayer, 'Regulating Data as Property: a New Construct for Moving Forward' [2018] Duke L & Tech Rev 220, 222; Thomas Hoeren and Philip Bitter, '(Re)Structuring Data Law: Approaches to Data Property' in Katrin Bergener, Michael Räckers and Armin Stein (eds.), *The Art of Structuring. Bridging the Gap Between Information Systems Research and Practice* (Springer 2019).

As discussed above, starting from these goals is the preferred way to proceed.

The drawback to establishing a (new) sui generis right has already been touched upon: there is a considerable a risk of its legal framework being incomplete leading to all sorts of teething troubles, such as interpretation and implementation issues.[35]

Furthermore, the data technology and data applications do not stand still; they are in constant and rapid development, as a result of which a right that is designed with specific types of digital data or data applications in mind today is likely to be outmoded tomorrow, which is evidenced by the EU's sui generis database right. That right was introduced by the Database Directive of 11 March 1996[36] and, in general, protects the maker of a database against unauthorized extraction or re-utilization of (the whole or parts of) the database (art. 7 Database Directive). Due to several reasons, the sui generis database right has never been a great success. Legal scholars have criticized the Database Directive and the instruments it has introduced, being the sui generis database right, as well as a specific intellectual property right in databases (art. 4 Database Directive), for (amongst others) being outdated and limited in scope.[37] Josef Drexl writes, "In sum, it is quite obvious that the Database Directive is based on a database technology that no longer corresponds to the

---

[35] See also Teresa Scassa, who notes "[t]hat the establishment of a new regime will carry with it the risk of getting it wrong […]." This author also discusses other challenges of establishing a new right. Teresa Scassa, 'Data Ownership' [2018] CIGI Papers No. 187 <https://www.cigionline.org/sites/default/files/documents/Paper%20no.187_2.pdf> accessed 20 January 2020.

[36] Parliament and Council Directive 96/9/EC of 11 March 1996 on the legal protection of databases [1996] OJ L 77/20.

[37] See, e.g, Drexl (n 22) 20-22; Richard Kemp, 'Legal Aspects of Managing Big Data', (2014) 30 Computer Law & Security Review 482, 487; Osborne Clarke LLP (n 34) 14; Wiebe (n 22) 64-65.

use of data in an era of 'Industry 4.0' or the Internet of Things."[38] The use of data this author refers to is one where machine-generated data and raw data, which are data that have not undergone any (substantial) processing, have become very important. With regard to these digital data, the requirements for a database sui generis right will not always be met, either because the digital data are not "arranged in a systematic or methodical way and individually accessible by electronic or other means" (art. 1, S. 2 Database Directive)[39] or because there has been no "qualitatively and/or quantitatively … substantial investment in either the obtaining, verification or presentation of the contents" of the database is" (art. 7, S. 1 Database Directive).[40]

III. Second Recommendation: Be Precise about the Object of Ownership

The meaning of the word ownership is not the only thing scholars and policymakers need to be precise about. They also need to be precise about what they consider or discuss as the object of ownership.[41] As noted earlier, the focus of the existing body of literature is mainly on the projected impact of data ownership on the data market as well as on personal data and privacy protection. That impact very much depends on the powers granted and the

---

[38] Drexl (n 22) 22.

[39] See, e.g., Hugenholtz (n 16) 9; Wiebe (n 22) 64.

[40] See, e.g., Osborne Clarke LLP (n 34) 14; Duch-Brown, Martens and Mueller-Langer (n 16) 14.

[41] See also (although sometimes less explicitly), e.g., Zech (n 16) 193 (with regard to the meaning of the word "information"); Drexl (n 22) 22 (with regard to the object of an intellectual property right in "data"); S. van Erp, 'Ownership of Data: the Numerus Clausus of Legal Objects', [2017] Brigham-Kanner Property Rights Conference J 235, 243, 251-252; Wiebe and Schur (n 27) 470; Stender-Vorwachs and Steege (n 14) 1365; Verheul (n 2) 582; Hoeren and Bitter (n 34); Swinnen, 'Eigendom van data? Reculer pour mieux sauter' (n *) 71-79.

limitations imposed by the right of ownership, but it equally depends on what these powers and limitations relate to, i.e., the object of ownership. Again, heterogeneity rules in the existing body of literature.[42] Some scholars write about data, others write about information[43] or digital data, and there are also authors writing about data files and data carriers. All these words are related, but they are not synonymous.

A. Information, Data, Digital Data, Data Files, and Data Carriers

The Oxford English Dictionary defines "information" as (amongst others) "knowledge communicated concerning some particular fact; subject, or event; that of which one is apprised or told."[44] That knowledge is based on or derived from data, [45] which is the plural form of 'datum', which the Oxford English Dictionary defines as "an item of information." For instance, by combining the datum that the height of a particular bridge is 3.5 meters and the datum that the height of a particular truck is 4 meters, we obtain the information that the truck will not be able to clear the bridge.

Because data are so numerous, humans have always sought ways to make data manageable, in order to collect them, to analyze them,

---

[42] See also van Erp, 'Ownership of Data: the Numerus Clausus of Legal Objects' (n 41) 243; Hoeren and Bitter (n 34).

[43] Some examples are: Bergelson (n 25) 379-451; Lipton (n 15) 53-66; Henry E. Smith, 'Intellectual Property as Property: Delineating Entitlements in Information' [2007] Yale LJ 1742; Zech (n 16) 192-197.

[44] *Oxford English Dictionary*, <www.oed.com> accessed 20 January 2020.

[45] I refer to the "General Definition of Information" (GDI) discussed by Luciano Floridi in: Luciano Floridi, *Information. A very short introduction* (Oxford University Press 2016). The point of departure of that definition is that information is made of data. See also Lee A. Bygrave, who writes (commenting on Floridi's work): "Moreover, his assumption that data is a necessary constituent of information accords with the apparent fact that naturally occurring phenomena do provide us with information." Lee A. Bygrave, 'Information Concepts in Law: Generic Dreams and Definitional Daylight' [2015] Oxford J Legal Studies 91, 116.

to store them, to share them with others, etc. Traditionally that was done by translating data into signs, symbols, numbers, letters, words, sentences, texts, etc., but over the past decades a new method has surfaced. That method consists of translating data into a digital code, i.e., into strings of ones and zeros. Data translated into such a code can be called "digital data" (or "digitized data") and it is these data that have become such valuable and powerful assets.

In order to store digital data, one inevitably needs a physical data carrier,[46] such as a compact disc or a hard drive, even if the digital data are stored in the cloud. In the latter case, the digital data are stored on the cloud provider's server,[47] which of course is also a physical data carrier. And how are digital data stored on a data carrier? They are (often) stored on a data carrier in the form of data files.

B. Semantic, Syntactic, and Structural Information

1. Introduction

The foregoing, which is a simplification and should be treated as such, can be summarized as follows. It all starts with data—from

---

[46] See, e.g., Matthias Berberich, *Virtuelles Eigentum* (Mohr Siebeck 2010); Zech (n 16) 19; Matthias Berberich and Julian Kanschik, 'Daten in der Insolvenz' [2017] NZI 1, 2; Verheul (n 2) 582.

[47] See, e.g., Jeffrey Allen, 'It's Three O'clock in the Morning: Do You Know Where Your Data Is?' (2011) 28 GPSolo 6, 6-7; Ashley Hallene, 'Clearing Up the Cloud' (2013) 30 GPSolo 35, 35; Carlos A. Rohrmann and Juliana F.S. Rocha Cunha, 'Some legal aspects of cloud computing contracts' [2015] JICLT 37, 37-39; Franziska Boehm, 'Herausforderungen von Cloud Computing-Verträgen: Vertragstypologische Einordnung, Haftung und Eigentum an Daten' [2016] Zeitschrift für Europäisches Privatrecht 358, 363, 384; Gerald Spindler, 'Digitale Wirtschaft – analoges Recht: Braucht das BGB ein Update?' [2016] JuristenZeitung 805, 812; Quentin Hardy, 'Where Does Cloud Storage Really Reside? And Is It Secure?' (*New York Times*, 23 January 2017) <www.nytimes.com/2017/01/23/insider/where-does-cloud-storage-really-reside-and-is-it-secure.html> accessed 20 January 2020; Verheul (n 2) 580.

which information is generated (e.g., by combining several data). Data can then be translated into a digital code, thereby becoming digital data. Digital data are stored on data carriers (often) in the form of data files. Although the words data, digital data, data carriers, and data files are clearly not synonymous, scholars often use them interchangeably. That is a pity, because depending on what one is talking about, the answer to the question whether data ownership is, could, or should be possible will be different.

Based on a division often used in semiotics, Herbert Zech divides information into three categories: semantic information, syntactic information, and structural information.[48] Semantic information is information per se or as such, i.e., a combination of data. Syntactic information is information or data translated into or represented by a specific medium, such as signs, symbols, letters, numbers, words, or, as is the case with digital data, a digital code. Lastly, structural information is "information contained in a certain physical carrier or in a wider sense information represented by the structure of a physical object."[49] Some examples of structural information are books, manuscripts, prints, and hard printed pictures, but also data carriers, such as compact discs, hard disks, servers, and USB flash drives. If we apply this division to the words I have just explained, we get the following result: information and data are semantic information, digital data and data files are syntactic information, and data carriers come under the category of structural information.

---

[48] Some other authors who apply this (or a very similar) distinction are: Drexl (n 22) 12; Wiebe (n 22) 67; Verheul (n 2) 581; Swinnen, 'Eigendom van data? Reculer pour mieux sauter' (n *) 73-75.

[49] Zech (n 16) 194.

2. *Property Law Ownership of Semantic, Syntactic, and Structural Information*

As far as structural information is concerned, ownership is not an issue.[50] Data carriers are physical goods and as a result can be owned under Dutch and Belgian law. An interesting question in this regard is whether the owner of the data carriers also owns the (digital) data stored on it.

From a purely factual point of view, digital data stored on a data carrier are the changes in magnetization of specific parts of the data carrier (magnetic storage), tiny pits and flats on the surface of the data carrier that are read by laser beams (optical storage) or, in the case of data storage on a USB flash drive, the electric charge of cells inside the data carrier (solid-state storage).[51] As such, digital data are only the (physical) state or shape the data carrier is in, just like wet, dry, cold, and hot are some (physical) states a towel, for instance, can be in. Because under Dutch and Belgian law a right of ownership extends to all components of the object it subsists in, the right of ownership of the data carrier extends to (i.e., includes) the digital data stored on it.[52]

---

[50] In this section, the word ownership refers to property law ownership.

[51] For different ways in which digital data can be stored on a data carrier, see, among others: Spindler (n 47) 812 (specifically about magnetic storage); van Erp and Loof, (n 23) 29-30; Lother Determann, 'Kein Eigentum an Daten' [2018] Multimedia und Recht 277, 277; Verheul (n 2) 581. About the technicalities, see, e.g., Gan Fuxi, 'Overview of Information Data Storage: An Introduction' in Gan Fuxi and Wang Yang (eds.), *Data Storage at the Nanoscale. Advances and Applications* (Pan Stanford Publishing 2015) (magnetic and optical storage); Duanyi Xu, *Multi-Dimensional Optical Storage* (Springer 2016); Charbel Tannous and Lawrence Comstock, 'Magnetic Information-Storage Materials' in Safa Kasap and Peter Capper (eds.), *Springer Handbook of Electronic and Photonic Materials* (Springer 2017) (magnetic storage).

[52] The following authors also state that data stored on a data carrier *belong to* the owner of the data carrier: Deutscher Anwaltverein, 'Stellungnahme des Deutschen Anwaltsvereins durch den Ausschuss Informationsrecht zur Frage des „Eigentums" an Daten und Informationen' [2016]

Things look very different on the other extreme. Unlike data carriers, information and data, which come under the category of semantic information, are not physical goods. They are not patrimonial rights either. In this regard, it is important to distinguish between the information or data per se and the rights one might have in or in relation to these data, for instance a contractual right (such as a license) or an intellectual property right. The latter rights are patrimonial rights, but the data themselves are not. As a result, information and data cannot be owned under Dutch and Belgian law, which, for several reasons, should not—or should only partially—be changed in the future.

First, there is often a problem of manageability or controllability with regard to information or data. Data can be in millions of places at the same time, they are written down, they are in people's minds, they are stored on computers, etc. This makes it both very difficult and pointless to vest exclusive power over the data in one person or company in the form of a right of ownership. In practice, it would be impossible for an owner to enforce his powers. For instance, how do you ensure that data—that are in millions of places, including people's minds, at the same time—are not being used without your consent?

<http://anwaltverein.de/de/newsroom/sn-75-16-frage-des-eigentums-an-daten-und-informationen>; Determann (n 51) 277; Spindler (n 47) 812; Koen Swinnen, 'De inpassing van digitale producten in het Belgisch Privaatrecht' in Daan Asser (ed.), *Vereniging voor de vergelijkende studie van het recht van België en Nederland. Preadviezen 2017* (Boom juridisch 2017); Verheul (n 2) 582. Emil Verheul states that by virtue of his right of ownership of the data carrier, the owner of the data carrier de facto has ownership-like claims on the data. Likewise, Herbert Zech writes: "The possession of a data carrier ensures access to the information. Property protection for the carrier—especially the possession of the carrier—indirectly protects access to the information." Zech (n 16) 196. *Contra* Thomas Hoeren, 'Dateneigentum. Versuch einer Anwendung von § 303a StGB im Zivilrecht' [2013] MMR 486, 490.

Second, making someone the owner of information or data could have quite far-reaching consequences as that person would be the only one to use the data lawfully. All other people would need the owner's permission to use the data. Suppose that from now on I am owner of the data about when the sun rises and sets over Rotterdam every day. The result would be that from now on I am the only one who can use these data lawfully and that all other people would need my permission to use it. Such absurdity cannot be justified from a social and scientific point of view or from many other points of view, such as the freedom of (or access to) information.[53]

It must be noted that I am taking things to the extreme now. There is a considerable amount of controllable or manageable data, even in an exclusive way,[54] where the aforementioned problem does not arise or is less flagrant, such as production data and sensor-generated data and, on a more general level, sole-source data. Ownership of these kinds of data is not unthinkable. However, recognizing ownership of these data would mean a need to differentiate among different types of data. Differentiation is in fact another important recommendation I would like to make in this Article: be aware of the existence of different types of data and digital data[55] and be prepared to abandon the idea that all data or digital data must follow the same ownership regime.

---

[53] See, e.g., Drexl (n 22) 24; Hugenholtz (n 16) 13-15; Wiebe and Schur (n 27) 467-468; Determann (n 51) 278; Verheul (n 2) 58. For a more technical explanation, see for instance: <http://techdifferences.com/difference-between-magnetic-disk-and-optical-disk.html> accessed 20 January 2020.

[54] See also Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 993.

[55] Josef Drexl writes (with regard to "variety" as one of the key-words in understanding big data): "[…] a wide range of different kinds and formats of data. Data may originate from different sources, such as machine sensors, websites or social platforms; it may be structured or unstructured; and it may consist in texts, pictures, audio or video." Drexl (n 22) 14.

Like information and data, digital data and data files (syntactic information) cannot be owned under current Dutch and Belgian law. As they are not physical or tangible nor patrimonial rights, they cannot be considered goods and as a result cannot be owned.

What about (property law) ownership of digital data de *lege ferenda*? I return to the Rotterdam example. Suppose that from now I am not the owner of the data but only of the *digital data* about the time of sunrise and sunset in Rotterdam stored on my computer. The consequences of this appropriation are substantially less far-reaching. From now on, I am the only person who can use and decide on the digital data on my computer. All data and information others might have about the time of sunrise and sunset in Rotterdam (on their computer, on their smartphone, in a book, in their mind, etc.), however, remain untouched. My exclusive powers are limited to the digital data on my computer.

Unlike a lot of data, digital data (and data files in particular) can be controlled and managed because it is possible to exercise power over them—including exclusive power. Data files can be modified, copied, sent to others, and so on, which means that they can be controlled.[56] They can also be stored in only one place or stored in such a way that only one person can access them (e.g., by password protecting them), which enables exclusive control.[57] The ability to effectively have exclusive control is a major difference between information and data on the one hand and digital data (and data files in particular) on the other hand. Data can be used by an endless

[56] See also explicitly Eric Tjong Tjin Tai, 'Een goederenrechtelijke benadering van databestanden' [2018] NJB 1799, 1801.

[57] See also Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 993. Although this author writes about exclusivity and "data," it is clear that he has "digital data" in mind.

number of people simultaneously,[58] but data files cannot. If I have stored a data file on my personal computer, I am (in principle) the only one who can access, modify, delete, copy, or forward that specific file. It is true that if I make a copy of my data file and send it to another person, the recipient and I can both access, modify, delete and so on the same *data* at the same time, but not the same *data files* (or digital data) as the copy and the original are distinct files, in the sense that the one copy exists independently from the other copy.[59] This is not altered by the fact that these data files, just like two copies of a printed book, contain exactly the same data. As a result, data files have much in common with current objects of property law ownership.

Not all legal scholars share this view, in particular the part on exclusivity and digital data. Emil Verheul states that today there is only de facto exclusivity with regard to data, which is achieved either by means of contractual stipulations or by means of exclusive control of the data carrier.[60] In other words, data can be made exclusive but are not exclusive by nature. Property law, on the contrary, according to Verheul, applies to and regulates control over objects that are exclusive (by nature), as opposed to objects that can be made exclusive. For that reason, property law cannot be used to make objects (such as data) exclusive. Without arguing in favor of the recognition of property law data ownership, I disagree with this reasoning. Just like data, parcels of land and buildings are not

---

[58] Likewise, Herbert Zech writes: "[…] having access to information is both non-rival and non-exclusive." Zech (n 16) 195.

[59] In this regard, Jeffrey Ritter and Anna Mayer write about duplicating data files: "While conventional discussions suggest data files can be duplicated, when properly enveloped or associated with related metadata and provenance, and bundled by suitable encryption or other controls, any data file can, in fact, be unique and incapable of perfect duplication." Ritter and Mayer (n 31) 263.

[60] Verheul (n 2) 584.

inherently exclusive, but are made exclusive. If it were not for the fences built around parcels of land or the locks placed on doors or, probably most importantly, the law prohibiting others from entering one's property, the use of parcels of land and buildings would be anything but exclusive. How is this different from digital data? For the sake of completeness, it must be noted that most movables, unlike immovables, are exclusive (by nature), because they can only be used by one person at a time, for instance a pair of shoes or a fork, although that is not true for all movables, such as a couch, a table, or a bed.

It is important to emphasize that this discussion refers to exclusivity with regard to data files, which is syntactic information, not with regard to data per se or semantic information. With regard to the latter, exclusivity, in the sense of being the only one to have access to certain data, is not always needed.[61] Often exclusivity will even be undesirable, as was demonstrated above by the example of the data about the time of sunrise and sunset in Rotterdam.[62] If I download a music file containing "Men of Good Fortune" by Lou Reed, a file constituting syntactic information, I care about listening to that song and—because I paid for it and it is stored on my personal computer—I do not want others to access the music file without my permission.[63] I do not care, however, if other people are listening to "Men of Good Fortune" in general, as that in no way affects my use

[61] See in particular: Drexl (n 22) 28; Tjong Tjin Tai, 'Privaatrecht voor de homo digitalis: eigendom, gebruik en handhaving' (n 2) 275.
[62] See also explicitly: Tjong Tjin Tai, 'Een goederenrechtelijke benadering van databestanden' (n 56) 1801.
[63] In other words, I want (exclusive) control of the music file, not of the music as such. See Tjong Tjin Tai, 'Een goederenrechtelijke benadering van databestanden' (n 56) 1801.

and enjoyment of the downloaded music file.[64] Likewise, it does not affect the data that together make up the song, i.e., the semantic information contained by my music file and possibly by millions of other music files. That is because data are nonrival: the use of data by one person does not prevent others from using these data simultaneously.[65]

3. *An Intellectual Property Right in Semantic, Syntactic, and Structural Information*

It is clear from the above sections that it is important to distinguish among information and data, digital data, data files, and data carriers. The answer to the question whether data ownership is, could, or should be possible differs depending on what we mean by data. The previous section used the word ownership in the sense of property law ownership. If we shift our attention to another type of ownership, to wit intellectual property, we see a different answer to the question whether data ownership is possible.

Data and information (semantic information) cannot be the object of property law ownership. However, if we change the meaning of ownership from property law ownership to "having an intellectual property right in data," one must conclude that data can be owned

---

[64] Josel Drexl writes: "[…] someone else's use of the same data does not prevent the 'owner' from using these data." Drexl (n 22) 28. See also Tjong Tjin Tai, 'Een goederenrechtelijke benadering van databestanden' (n 56) 1802.

[65] See about the fact that data are nonrival, e.g., Smith (n 43) 1744; Drexl (n 22) 28; Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 992-993; Paal and Henneman (n 16) 1698; Charles I. Jones and Christopher Tonetti, 'Nonrivalry and the Economics of Data' [2018] <www.gsb.stanford.edu/faculty-research/working-papers/nonrivalry-economics-data>; Bertin Martens, 'JRC Digital Economy Working Paper 2018-09. The impact of data access regimes on artificial intelligence and machine learning' [2018] JRC Technical Reports <https://ec.europa.eu/jrc/communities/sites/jrccties/files/dewp_201809_data_and_ai_181218.pdf>; Verheul (n 2) 195.

as they can be the object of a patent[66] or constitute a trade secret,[67] which receives (a kind of) intellectual property law protection.

The same is true for digital data and data files (syntactic information). Whereas they cannot be the object of property law ownership, an intellectual property right can subsist in them, such as a copyright.[68] One could for instance think of copyrighted software. Also emails, websites, blogs, can be copyrighted, provided they meet the requirements for copyright protection.

As far as data carriers (structural information) are concerned, the conclusion is reversed. Because they are physical or tangible objects, data carriers can be the object of property law ownership. However, one cannot have an intellectual property right in a specific data carrier, only (in the form of a patent) in the data carrier's design.

IV. Third Recommendation: Cooperate Closely with IT Specialists

My third recommendation builds on the second. Although it is shorter than the other recommendations, its relevance should not be underestimated. According to the second recommendation, lawyers and policymakers need to be precise about what they consider or treat as an object of ownership. The third recommendation adds to this. When trying to be precise about what the right of ownership subsists in, lawyers and policymakers must cooperate closely with IT specialists.

As noted earlier, the words information, data, digital data, data files, and data carriers often figure in the existing body of literature without explanation or clear distinctions. However, these terms are

---

[66] See also Zech (n 16) 195.
[67] See also Drexl (n 22) 23; Zech (n 16) 195.
[68] See, e.g., Lipton (n 15) 56; Zech (n 16) 195; Wiebe (n 22) 68.

just the basics. What exactly happens when a data file is saved, emailed, or deleted? How are digital data stored? And what does it mean that digital data are stored in the cloud? Where exactly are stored digital data and how is storage in the cloud different from more traditional ways of storing data? What happens to the digital data when a data file is modified? These are just a few of many questions lawyers and policymakers need to know the answers to in order to be able to answer the question whether (property law) data ownership could or should be recognized.

Even without the answers to these questions, lawyers should understand that digital data cannot be subjected to a single, comprehensive legal regime. If we decide to subject digital data to ownership, the creation of specific, made-to-measure legal regimes will be necessary to differentiate among different types of digital data.

The division of digital data into different types could be based on several criteria.[69] A likely criterion is the kind of data the digital data relate to, for instance personal data versus non-personal data, sole-source data versus multiple-source data, and data that belong versus data that do not belong (or should belong) to society as a whole (such as the data about sunrise and sunset time). Depending on the IT specialists' input, technological peculiarities might—and in fact are very likely to—serve as a baseline for differentiation among different types of digital data. For instance, real-time data are (usually) not stored as they are generated or collected for immediate use, such as tracking and navigation. In other words, real-time data have a very short, close to nonexistent life span. Because of their fleetingness, it

[69] See also Sjef van Erp, 'The need for a common vocabulary on 'data ownership'' [2019] European Property LJ 1, 1.

is difficult, and perhaps pointless, to subject real-time data to ownership.[70]

V. Fourth Recommendation: Include Creditors in the List of Stakeholders

The focus of scholars and policymakers is mainly on the possible effects of recognizing data ownership. In particular, the literature tends to consider three groups of stakeholders: data producers, (commercial) data users, and data subjects. While these three groups are very important, they are not the only stakeholders. Creditors, and more specifically creditors of people or companies that *own* digital data, also make up an important category of stakeholders, as will be demonstrated below with regard to Dutch and Belgian law. But first a brief and non-exhaustive overview of the focus on data producers, (commercial) data users, and data subjects is necessary.

A. Data Producers, (Commercial) Data Users, and Data Subjects

The recognition of data ownership is often associated with securing and stepping up the mass production of digital data. An important question in this regard is whether granting data producers data ownership would really be an incentive to continue and step up that production.[71] This question is rarely answered, mostly because another, preliminary question is answered in the negative: do data producers actually need an incentive?[72] There are two reasons why

---

[70] See also Josef Drexl, who notes that "[v]elocity may be an even more important feature to be taken into account for the regulation of ownership." Drexl (n 22) 15.
[71] See, e.g., Drexl (n 22) 30-32; Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 992-993; Duch-Brown, Martens and Mueller-Langer (n 16) 14.
[72] See for instance: Drexl (n 22) 31; Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 992-993; Kerber, 'Governance

this question is answered to the negative. The first one is pretty straightforward: data producers already produce massive amounts of digital data, without any additional incentive.[73] The second reason is that while they may not have legal ownership, many data producers already have de facto ownership of the digital data they produce. Some data producers—including companies that manufacture products that generate data, such as car manufacturers—are even openly against (legal) data ownership.[74] This opposition may stem from their fear that other entities will be declared the legal owners, such as the owner of a data producing product.[75]

The focus of many scholars is not so much on the goals we want to achieve by recognizing ownership, but on the consequences that this introduction will have. A major concern is the impact of data ownership on competition between companies that use digital data for commercial or economic purposes. Will the recognition of ownership of digital data lead to the creation of monopolies,[76]

---

of Data: Exclusive Property vs. Access' (n 22) 761; Wiebe (n 22) 67; Duch-Brown, Martens and Mueller-Langer (n 16) 14; Yu (n 32) 887.

[73] See, e.g., Marc A. Rodwin, 'Patient Data: Property, Privacy & the Public Interest' [2010] AJLM 586, 509-600; Drexl (n 22) 31; Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 992-993; Kerber, 'Governance of Data: Exclusive Property vs. Access' (n 22) 761; Wiebe (n 22) 67; Yu (n 32) 887 ("After all, many of the targeted data will already be generated regardless of the existence of these new rights.").

[74] See, e.g., Zukunftsrat der Bayerischen Wirtschaft, 'Zukunft digital – Big Data Analyse und Handlungsempfehlungen' [2016] <https://www.vbw-zukunftsrat.de/Big-Data/Handlungsempfehlungen#publikationen> accessed 20 January 2020; Bundesverband der Deutschen Industrie e.V., 'BDI-Positionspapier Datenwirtschaft' [2017] <https://ec.europa.eu/information_society/newsroom/index.cfm> accessed 20 January 2020; Also writes about this: Drexl (n 22) 6.

[75] See also Drexl (n 22) 6.

[76] See, e.g., Josef Drexl, Reto M. Hilty, Luc Desaunettes, Franziska Greiner, Daria Kim, Heiko Richter, Gintaré Surblytė and Klaus Wiedemann, 'Ausschließlichkeits- und Zugangsrechte an Daten' [2016] Stellungnahmen Max-Planck-Institut für

market distortions,[77] and restriction of market access?[78] Lothar Determann argues that if one company owns certain digital data, other companies will have to either buy these digital data or try to be granted access rights—both presumably at a high price—or try to produce or collect these digital data themselves, which is not an option in case of sole-source data.[79] As a result, other companies—are likely to end up without access to the digital data.[80] On the relation between owning data and competition in general, Margaret Radin also explains: "Because information propertization is designed to restrict competition, if not always by creating economic 'monopolies,' at least by enhancing the position of one competitor vis-à-vis others, it is apparent that the competition neighborhood is adjacent to the propertization neighborhood."[81]

A third perspective that is often taken in the existing body of literature is a privacy and data protection law perspective. At the core of this perspective is the fundamental idea that people's privacy and personal data must be protected. That includes, among others, that their personal data are handled with care and that a data subject remains somehow in control of his own personal data. Whereas certain authors consider ownership of (personal) data a threat to

---

Innovation und Wettbewerb <http:// www.ip.mpg.de/de/link/positionspapier-daten-2016-08-16.html> accessed 20 January 2020 (these scholars answer the question in the affirmative); Hugenholtz (n 16) 14; Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 997; Kerber, 'Governance of Data: Exclusive Property vs. Access' (n 22) 761; Rodwin (n 68) 601-603; Gärtner and Brimsted (n 34) 464; Lothar Determann, 'No one owns data' (2018) 70 Hastings LJ 1, 38-39.

[77] See, e.g., Duch-Brown, Martens and Mueller-Langer (n 16) 19.

[78] See, e.g., Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 992-993; Stender-Vorwachs and Steege (n 14) 1366.

[79] See also about-sole source data (besides Determann): Stender-Vorwachs and Steege (n 14) 1366-1367.

[80] Determann 'No one owns data' (n 76) 38-39.

[81] Margaret Jane Radin, 'A Comment on Information Propertization and Its Legal Milieu', (2006) 54 Clev St L Rev 23, 28.

privacy and the protection of personal data,[82] others are favorably disposed and consider it a valuable tool to protect privacy and personal data.[83] The explanation for this discrepancy is surprisingly simple: the former authors write about a right of ownership that is not attributed to the data subject, whereas the latter authors write about a right of ownership vested in the data subject.[84]

B. Creditors of Data Owners

Scholars today often overlook the interests of the creditors of digital data owners. As far as Dutch law and Belgian law are concerned, these creditors would be better off with ownership of digital data. Because they are not goods, digital data cannot be pledged or attached under current Dutch and Belgian law.[85] As a result, a large and often valuable group of assets is beyond the creditors' reach, in the sense that they cannot have these assets sold

---

[82] See, e.g., Prins (n 15) 271-303; Nicola Jentzsch, 'Dateneigentum–Eine gute Idee für die Datenökonomie?' [2018] Stiftung Neue Verantwortung–Publikationen <www.stiftung-nv.de> accessed 20 January 2020.

[83] See, e.g., Kenneth C. Laudon, 'Markets and Privacy' [1993] ICIS 1993 Proceedings 65, 65; A. Michael Froomkin, 'The Constitution and Encryption Regulation: Do We Need a 'New Privacy'?' [1999] NYU J Legislation and Public Policy 25, 34; Lawrence Lessig, 'The Architecture of Privacy' [1999] Vanderbilt J Entertainment L & Practice 53, 63; Bergelson (n 25) 383 ("This Article takes the position that, in order to protect privacy, individuals must secure control over their personal information by becoming its real owners."); Lawrence Lessig, *Code version 2.0* (Basic Books 2006); Christopher Rees, 'Who owns our data?' [2014] Computer L & Security Rev 75, 79; Paal and Henneman (n 16) 1698.

[84] See also Scassa (n 35) 16.

[85] As far as pledge is concerned, this follows from art. 3:227, S. 1 Dutch Civil Code and art. 7 Belgian Pledge Act. As far as attachment and levy are concerned, this follows from art. 3:276 Dutch Civil Code together with several provisions of the Dutch Code of Civil Procedure as well as from art. 7 Belgian Mortgage Act together with (among others) art. 1413 and 1494 Belgian Code of Civil Procedure. Also conclude that data cannot be pledged and/or attached (directly): van den Heuvel (n 2) 438 (Dutch law); Swinnen, 'De inpassing van digitale producten in het Belgisch privaatrecht' (n 2) 1027-1030 (Dutch and Belgian law); Ruitinga (n 2) 200 (Dutch law).

in case of default by their debtor. At the same time, it also prevents data owners from getting the most out of there valuable digital data as they cannot use them as collateral for a loan.[86]

It must be emphasized that under current Dutch and Belgian law, digital data cannot be pledged, attached, and levied upon directly. It is, on the other hand, possible to get to the digital data indirectly, by pledging, attaching, or levying upon the data carrier or by or a specific right that the debtor has in relation to the digital data, such as a contractual right (e.g., a license), an intellectual property right, or an EU sui generis database right. Article 7 of the Database Directive states that the sui generis right may be transferred or assigned, which implies, at least as far as Dutch law[87] and Belgian law[88] are concerned, that it may also be pledged and attached.

Although pledging, attaching or levying upon the data carrier also includes the digital data stored on the data carrier, because these

---

[86] See also Wolfgang Kerber, who writes: "In addition, the propertization of innovations and creative works can also facilitate their use as securities and therefore can help to fund innovative firms. *All of these arguments can also be applied to data*." (emphasis added). Kerber, 'A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis' (n 16) 993.

[87] By virtue of the articles 3:83, S. 1 and 3:98 Dutch Civil Code, a good can only be pledged if it is "transferrable." Some scholars who write explicitly that the database right sui generis can be attached and levied upon are: van den Heuvel (n 2) 438; Ruitinga (n 2) 200-201. With regard to pledge, see among others Bas Le Poole, 'Zekerheidsrechten op intellectuele eigendomsrechten' [2002] Tijdschrift voor Insolventierecht 265; Alexander Steneker, *Monografieën BW – Pandrecht* (Kluwer, 2012); Dirk Visser, 'Databankenwet. Inhoud bescherming' in Paul Geerts and Dirk Visser (eds), *Tekst & Commentaar Intellectuele Eigendom* (Wolters Kluwer 2019).

[88] Swinnen, 'De inpassing van digitale producten in het Belgisch privaatrecht' (n 2) 1035. According to article 7 Belgian Pledge Act, only goods that are "transferrable by virtue of law" can be pledged. About transferability as a prerequisite for attachment and levy, see among others: Eric Dirix and Karen Broeckx. *APR-Beslag* (Kluwer 2001); Georges de Leval, *La saisie immobilière* (Larcier 2007); Ruud Jansen and André Michielsens, *Notarieel executierecht* (Intersentia 2010).

data are part of the data carrier,[89] it is not a real alternative to pledging, attaching, or levying upon the data themselves.[90] One of the main problems is that today a considerable amount of digital data is stored in the cloud, which in fact means that they are stored on one or more servers owned by the cloud provider. In principle, both Dutch law and Belgian law do not allow a creditor to attach and levy upon goods that are not owned by their debtor. As a result, going after the data carrier is no option in case of data stored in the cloud.

Obviously, going after the data carrier is an option if the digital data are stored on a data carrier owned by the debtor, although that option is far from ideal. First, if a debtor's data carrier is sold with the goal of monetizing the data stored on it, the debtor does not only lose the data but also the data carrier. That additional loss will often be pointless, the size of which will depend largely on the value of the data carrier, e.g., a USB stick or data server, because future buyers will usually be interested in the digital data only, not in the data carrier they are stored on. Second, and most importantly, a data carrier is likely to contain a whole variety of digital data, several of which are of no economic value and are, because of their particular nature, not meant to fall into the hands of others. Some examples are trade secrets, industrial secrets, and personal data. While these data might still be protected by intellectual property rights or—in the European Union—the GDPR, there are also data that are likely not protected, such as certain accounting and financial data, general salary and bonus data, and data about access to company buildings.

---

[89] See III.B.2.

[90] I refer to my earlier publications on this topic. In these publications, the same conclusion was reached with regard to pledge or attachment of a sui generis database right. See Swinnen 'De inpassing van digitale producten in het Belgisch privaatrecht' (n 52); Swinnen, 'De inpassing van digitale producten in het Belgisch privaatrecht' (n 2) 1035-1038.

If a data carrier that contains these digital data is pledged, attached, or levied upon, the digital data will also be involved and possibly end up in the hands of others, although the creditor does not need them for purposes of having recourse because of their lack of economic value. As such, going after the data carrier bears a strong resemblance to dragnet fishing: both bear the risk of doing a lot of unnecessary damage.

When a creditor extends credit to a debtor, be it in the form of extending a loan or allowing the debtor to pay the purchase price at a later date, he inevitably runs a risk: the risk of not getting his money (back). To mitigate that risk, both Dutch law[91] and Belgian law[92] stipulate that in case of default a creditor may have recourse to the debtor's belongings. In these legal systems, "belongings" is understood as goods, which means that digital data are not included.

This denial of access to digital data is at odds with the rationale of the rule that a creditor may have recourse to the debtor's belongings. The rule exists not only to mitigate the risk of not getting paid, but also to encourage and enable the extension of credit. Given the immense value of today's digital data and the fact that digital data will often be among a company's most valuable assets, there is no good reason to deny creditors recourse to digital data.

This final recommendation is not a plea for the recognition of property law ownership or of any other form of ownership of digital data. The main goal of this recommendation is to make lawyers and policymakers realize that there is more to regard than the interests of data producers, (commercial) data users, and data subjects only. Put differently, lawyers and policymakers need to widen their outlook. The fact that digital data cannot be pledged or attached

---

[91] Art. 3:279 Dutch Civil Code.
[92] Art. 7 Belgian Mortgage Act.

directly must be included—along with many other arguments—in the balancing exercise the legislature will have to carry. Obviously, the impact on credit is but one issue for legislatures to consider when determining whether to recognize data ownership. Moreover, there are also other ways to make digital data susceptible to pledge, attachment, and levy without having to take a stand in the data ownership debate, such as introducing legislation that stipulates that data can be pledged, attached and levied upon upon, pledged, and attached.

VI. Conclusion

This Article makes four recommendations for ongoing and future research about ownership of (digital) data. The essence of these recommendations is that we need to know what we are talking about before we can even think of trying to answer the question whether data ownership should be introduced. What is meant by ownership? And what would possibly be subject to ownership: information, data, digital data, data files, or data carriers? The first and second recommendations assert that we need to be precise about the meaning and the possible object of ownership. When doing so, and that is the third recommendation, lawyers and policymakers will have to collaborate closely with IT-specialist because only they know what is really out there in the digital world. In the words of Wittgenstein:"*Wovon man nicht sprechen kann, darüber muß man schweigen.*"[93] Put differently—and regardless of whether this interpretation is what Wittgenstein actually meant—lawyers and policymakers cannot develop law on things that they do not know inside out. The fourth and last recommendation holds that creditors

[93] English translation: whereof one cannot speak, thereof one must be silent. See Proposition 7 of Ludwig Wittgenstein's famous *Tractatus Logico-Philosophicus*.

of digital data owners, and not only data subjects, data producers, and data users, must be considered and treated as stakeholders in the debate on recognizing ownership of (digital) data.