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**2020-04-14**
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http://hdl.handle.net/10138/329016
Pihlajarinne, T & Ballardini, R M 2020, 'Paving the way for the Environment : Channelling ‘Strong’ Sustainability into the European IP System', European Intellectual Property Review, vol. 42, no. 4, pp. 239-250.

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# Paving the way for the Environment - Channeling 'Strong' Sustainability into the European IP System

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## 1. Introduction

The consequences of the biggest environmental challenges, such as climate change and loss of biodiversity, are already here.[1] Rapid, large-scaled actions are needed to tackle these problems. Intellectual property rights (IP, IPR) might not be the first remedy that comes to mind when considering these issues, but they certainly have their role in this context due to their impact on technological innovation and business. Indeed, the ability of the IP system to respond to societal expectations and needs broadly has attracted considerable attention recently.[2] Despite the fact that IP law should aim to reflect proportionality and to create a balance between the IP holders' exclusive rights and other societal interests, several areas of IPR need to be improved in order for it to endorse a vision that goes beyond a 'pure incentives-types' of perspective. Copyright, patents and design rights should carry the ultimate goal of serving progress in a wider sense. Moreover, notwithstanding the traditional conception that trade marks are different in the sense that they are rather business tools *par excellance*, recent literature supports the view that also more 'societal-type' of values, with an increased emphasis on the consumers' perspectives and needs, lie also behind the rationale for protecting trade marks.[3]

Courts in Europe have also felt this desire in several occasions.[4] On the one hand, these discussions have led to the inclusion of perspectives form other legal fields (like competition law and fundamental rights), as well as of interdisciplinary oriented perspectives, into the IP law discourse. On the other, despite the IPR system´s principal ability to recognise and take into account other societal interests, topics such as embedding fairness and ethics into IP are becoming increasingly important.[5] One key element in this discourse relates to the importance of reflecting environmental sustainability into the IPR regime.

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[1] About climate change, see for instance *https://climate.nasa.gov/evidence/*; K. V. Wong, *Climate Change* (New York: Momentum Press, 2015), Ch. 6. About biodiversity loss, see for instance P. Raven, "The Epic of Evolution and the Problem of the Biodiversity Loss" in *Biodiversity & the Law. Intellectual Property, Biotechnology and Traditional Knowledge* (London: Routledge, 2012), pp. 27–33.

[2] See, for instance, R.M. Ballardini and T. Pihlajarinne, "Intellectual Property Rights, Technology and the Environment: Academic Prospectives on Fostering Sustainable Innovation" (2019) 1/2019 NIR (Nordiskt Immateriellt Rättskydd) 152–155.

[3] See, for instance, K. Weckström, *A Contextual Approach to Limits in EU Trade Mark Law*, (Helsinki: Publications of the IPR University Center 8, 2011).

[4] For several examples, see for e.g A. Tizzano, "The Role of the ECJ in the Protection of Fundamental Rights" in *Continuity and Change in EU law: Essays in Honour of Sir Francis Jacobs* (New York: Oxford University Press, 2008) 125–138.

[5] For other examples, see Adam D. Moore, "Intellectual Property, Innovation, and Social Progress: The Case Against Incentive-Based Arguments" (2003) Vol 26 The Hamline Law Review 601–630, ("Hopefully, upon recognized the difficulties that infect rule-utilitarian intellectual property, we may begin to move away from our current system—a system that views intellectual property rights as state-created entities—and toward

Until recent years, environmental issues have been confined into the field of public areas of law, such as environmental law and energy law, where several legislative and policy actions have been taken at national, regional, as well as global levels. Private law, on the other hand, has received little attention. Gradually, however, sustainability has started to be perceived as a broader issue, that should not only touch upon those fields of law that have most direct relevance to it.[6] Instead, environmental sustainability is now conceived more holistically, as a policy or even a fundamental right that demands integration *inter alia* into all or most areas of law. Considering the key role that private law (especially IP law) plays in fostering technological innovation and creativity, as well as in regulating business, there is an urgent need for assessing the ability of this legal field to better embrace environmental sustainability, this way propagating a fair distribution of environmental benefits and burdens widely.

This article explores the emerging need for embedding environmental sustainability into the European IP law system by focusing on few important examples. The perspective stems from two core planetary boundaries, namely climate change and biosphere integrity. We begin with a general discourse on the role of sustainability in European IP law observing that it is evident that IPR laws in Europe should more explicitly reflect such value. We then turn to the current IP system in search for a place for sustainability. First, we shed light over how the way that the scope of protection and the concept of IP ownership are currently understood does not give space for including sustainability. Instead, we argue that, at the moment, societal values, in general, are primarily incorporated into the IPR regime indirectly as part of general argumentation on competition, or only as singular, narrow exceptions to strong property rights as a main rule. In this context, we then focus on the principle of exhaustion, and some other limitations that are closely related to it, using it as a key example to show how trying to embed societal values, like sustainability, only as an exception to the main rule, is actually untenable.

To support our claim we make use of two concrete scenarios, namely the sharing and the circular economies, where IPR could allegedly be a major driver in the path towards promoting sustainable innovation and business models. We shed light over major reasons for why sustainability could face insurmountable obstacles if being channeled into the IPR framework only or primarily via the exhaustion door or via other exceptions and limitations. Instead, we develop recommendations for how environmental sustainability could be better considered directly into the scope of the exclusive rights, this way clearly aligning IP rights with the planetary boundaries as enforced in the limits set by sustainability.

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institutions that acknowledge and uphold the natural rights of authors and inventors.") (emphasis in original); Alina Ng Boyte, "Finding Copyright's Core Content" (2013) 10(3) U. St. Thomas L.J. 774, 775; David Opderbeck, "Beyond Bits, Memes, and Utility Machines: A Theory of Intellectual Property as Social Relations" (2013) 10(3) U. St. Thomas L.J. 738–773.

[6] For instance, in 2014 sustainability was assessed as being located "in a periphery of mainstream regulation". It has taken time to start integrating sustainability-related concepts even in environmental and public health regulation and great efforts are needed in other areas of law. See T. F. Malloy, "Design for Regulation: Integrating Sustainable Production into Mainstream Regulation" in *Law and the Transition to Business Sustainability* (Cham: Springer, 2014), p. 3, 20, pp. 1–23.

## 2. What Should be the Place for Sustainability in the European IP system?

The concept of 'sustainable development' originates from the Report of the World Commission on Environment and Development (WCED) of 1987, where it was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". In the WCED, it was also stated that sustainable development is "a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs."[7] Sustainability is usually defined through interconnected pillars that include a wide variety of environmental, economic and social issues. For instance, the environmental pillar refers to the protection of environmental resources to present and future generations.[8] Sustainability is also defined as the social foundation for humanity within 'planetary boundaries'[9], including core issues such as climate change and biodiversity. Moreover, recently, a division has arisen between 'weak' and 'strong' sustainability: while weak sustainability brings environmental concerns into the existing structures and systems of business, strong sustainability aims at integrating business into environmental systems by challenging existing structures so that the industrial activities would actually fit within the capacity of the Planet.[10]

According to Article 3(3) of the Treaty on the of the European Union (TEU) the EU shall work for the 'sustainable development' of Europe. This goal specifically includes a high level of protection and improvement of the quality of the environment. Moreover, according to Article 11 of the Treaty on the Functioning of the European Union (TFEU) environmental protection requirements must be integrated into the definition and implementation of Union's policies and activities. This seems to indicate that such requirements shall be reflected in all fields of EU regulation.[11] Indeed, this environmental integration obligation must be balanced with protection of property and intellectual property protection referred in Articles 36 and 118 of the TFEU.[12] This notwithstanding, however, while the EU strongly supports the UN

[7] United Nations World Commission Report on Environment and Development Our Common Future. Available in: *https://www.are.admin.ch/are/en/home/sustainable-development/international-cooperation/2030agenda/un-_-milestones-in-sustainable-development/1987--brundtland-report.html* (Accessed 14th May 2019).
[8] E. Rodrigues, *The General Exception Clauses of the TRIPS Agreement. Promoting Sustainable Development* (New York: Cambridge University Press, 2012), pp. 1–2.
[9] See Johan Rockström, "Planetary Boundaries: exploring the safe operating space for humanity" (2009) 14(2) Ecology and Society. See also Beate Sjåfjell, Jukka Mähönen, Adrew Johnston and Jay Cullen, "Obstacles to Sustainable Global Business. Towards EU Policy Coherence for Sustainable Development" SMART Project (2019) University of Oslo Faculty of Law Research paper No 2019-02 pp. 16–18 (On file with the authors).
[10] N. Roome, "Looking Back, Thinking Forward: Distinguishing Between Weak and Strong Sustainability" in *The Oxford Handbook of Business and the Natural Environment* (New York: Oxford University Press, 2012), p. 620, pp. 620–629.
[11] See also B. Sjåfjell and A. Wiesbrock, "The importance of art. 11 TFEU for regulating business in the EU Securing the very basis of our existence" in *The Greening of European Business under EU law. Taking Article 11 TFEU Seriously* (London: Routledge, 2015), p. 1, pp. 1–12.
[12] See also TFEU art. 4.3, which states that in the areas of research, technological development and space, the Union shall have competence to carry out activities.

Sustainable Development Goals (SDG)[13], policy coherence and a holistic evidence-based approach for achieving sustainability within the IPR framework is still missing in the EU framework.[14]

As above-mentioned, the crossroads of IPR and sustainability has gradually started to provoke explicit discussion over the last decade. Certainly, the relationship between IPR and human rights as a part of social sustainability is nothing new. However, environmental sustainability is a rather fresh perspective in the IPR context. On the one hand, the discourse around IP law and sustainable development has, thus far, mostly focused on issues related to international trade and within the context of international agreements, such as the TRIPs Agreement, where a range of views about international IPR regimes has emerged to highlight the cost-benefit balance between developed and developing countries.[15] On the other, however, the impact of the IP regime on the development and deployment of sustainable innovations has not attracted great attention.[16]

The relationship between IPR and environmental sustainability is not straightforward neither in the formulation nor in the application of the European IPR regulation. It could be argued that the fundamental theories of justification of IPR are in line with the general idea of sustainability. For instance, according to most utilitarian and Lockean theories the purpose of IPR is to encourage the production of intangible assets, reward and acknowledge those who have contributed to the proliferation of such assets, and safeguard collective cultural benefits, fostering sustainable welfare.[17] On the other hand, however, a balance needs to be sought between providing incentives and guaranteeing access.[18] Moreover, the principle of proportionality, that is the requirement that exclusive rights should be proportionate to the value or importance of the protected subject matter, also supports the idea of sustainability having a visible role in the IPR system.

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[13] See UN, Sustainable Development Goals, Available in: *https://www.un.org/sustainabledevelopment/sustainable-development-goals/* (accessed 31st May 2019)

[14] B. Sjåfjell et al., *Obstacles to Sustainable Global Business. Towards EU Policy Coherence for Sustainable Development.*

[15] For instance, see R. Meléndez-Ortiz and P. Roffe, *Intellectual Property and Sustainable Development*, (Cheltenham: Edward Elgar, 2009) and Rodrigues, *The General Exception Clauses of the TRIPS Agreement. Promoting Sustainable Development*.

[16] Rimmer, amongst the few, discusses some core issues from the perspective of international trade, organisations and agreements, related to the role of IP for climate change and clean energy. See M. Rimmer, *Intellectual Property and Climate Change: Inventing Clean Technologies (Intellectual Property and the Environment)*, (Cheltenham: Edward Elgar Publishing, 2011) and M. Rimmer, *Intellectual Property and Clean Energy. The Paris Agreement and Climate Justice*, 1st edn (Singopore: Springer, 2018). Moreover, the interplay between IPRs and climate change is analyzed in, for instance J. Sarnoff, *Research handbook on Intellectual Property and Climate Change* (Cheltenham: Edward Elgar Publishing, 2016).

[17] See, for instance, G. Van Overwalle, "Smart Innovation and inclusive patents for sustainable food and health care: Redefining the Europe 2020 objectives" in *Constructing European Intellectual Property. Achievements and new Perspectives* (Cheltenham: Edward Elgar, 2013), p. 231, p. 250, pp. 231–254.

[18] For information about general theories for justifying IPR see: Justin Hughes, "The Philosophy of Intellectual Property" (1988) 77(2) *Geo. L.J.* 287–366. Also other justifications than utilitarian theories for IPR exist, especially those drawn from a Locke's "theory of property", see: John Locke, *Two Treaties of Government* (1690), P. Laslett, ed., Cambridge: Cambridge University Press, 1970, Second Treatise, Sec. 27.

Despite these general starting points, however, it seems that the IPR regime fails in fully recognising sustainability for two main reasons. First, the strong 'property rights approach', which has traditionally been followed in Europe and is reflected in many of the current structures of the European IPR framework, hinders the sustainability perspective to be genuinely taken seriously. Second, under the current rules, the principle of proportionality seems to open the door for the weighing and balancing between the exclusive rights and, for instance, general arguments on free competition and efficient markets, but not sustainability. This might not be enough for creating the regulatory mechanisms needed in the struggle against the environmental challenge. In fact, this setting makes it difficult for sustainability arguments to override the traditional IPR justifications of providing incentives. Indeed, a 'strong property rights' approach might create barriers towards promoting sustainable innovations and business models. Under the current economic, incentive- and exclusion-based approach to intellectual property, public interests, like sustainability, are often taken for granted, with noneconomic values ignored or subordinated to private economic interests.

## 3. Scope of IPR Protection and the Invisible Link to Sustainability

The claims above exposed are reflected into several structures of the current IPR framework in Europe. From the point of view of scope of protection and ownership, as well as scope of exclusive rights, some considerations are devoted to the role of societal values in the European IP regimes. For instance, according to Article 53 of the European Patent Convention[19], as well as Article 6(1) of the EU Biotechnology Directive[20], inventions shall be considered unpatentable where their commercial exploitation would be contrary to ordre public or morality. In copyright law, freedom of speech as a fundamental societal value is reflected into the scope of protection. Furthermore, for instance Art 3 (b) of the Infosoc Directive[21] provides an example of human rights-based exception: the article allows member states to adopt exceptions for the benefit of people with a disability. Also in the trademark regime trademarks which are contrary to public policy or to accepted principles of morality constitute reasons for absolute grounds for refusal or invalidity.[22]

Although public policy and morality are meant to be open legal concepts to provide an entrance door for fundamental rights, thus allowing possibilities for taking into account ethical values when defining the content and scope of intellectual property rights, these concepts are often interpreted narrowly. For instance in the context of patent law, the EPO Guidelines for examination affirms that, on the one hand, "the purpose of this is to deny protection to

[19] The European Patent Convention, 16th Edition/June 2016. Available at: *https://www.epo.org/law-practice/legal-texts/epc.html* (accessed on 3rd May 2019).
[20] Directive 98/44 on the legal protection of biotechnological inventions [1998] OJ L 213. Available at: *https://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31998L0044:EN:HTML*(accessed on 3rd May 2019).
[21] Directive 2001/29 on the harmonisation of certain aspects of copyright and related rights in the information society [2001] OJ L 167 (InfoSoc Directive).
[22] See for e.g. Directive 2015/2436 to approximate the laws of the Member States relating to trade marks [2015] *OJ L 336* (TMD) art. 4 and EU Regulation 2015/2424 amending Council Regulation 207/2009 on the Community trade mark and Commission Regulation 2868/95 [2015] *OJ L 341* (TMR) art. 7.

inventions likely to induce riot or public disorder, or to lead to criminal or other generally offensive behaviour" only. For example, the provision have thus far been applied only to the context of biotechnologies, such as stem cells research and gene-related technologies, where ethical issues related to the manipulation of human and lifes has emerged at several occasions[23], or in relation to inventions likely to induce riot or public disorder, or to lead to criminal or other generally offensive behaviour. On the other hand, the Guidelines themselves explicitly state that "this provision is likely to be invoked only in rare and extreme cases".[24] Similarly, in the case of trade mark "public policy" or "accepted principles of morality" have, thus far, been interpreted accordingly to the EUIPO guidelines as sings like those which consist of names of individuals or groups connected with terrorism[25] , dishonest signs or sings instigating racial, political or religious intolerance, sings which promote violence, racisms, crimes, as well as signs which consist of the symbols and names of unconstitutional parties or organizations which are prohibited in Germany and in Austria and symbols of totalitarianism and pejorative, discriminatory, indecent and vulgar signs, if so-called reasonable person with normal levels of sensitivity and tolerance would feel that.[26]

All this indicates that not only the European IPR legislation hardly contains explicit remarks on *environmental* sustainability, but also that arguments related to environmental sustainability have not even yet been presented nor thoroughly discussed in court decisions in Europe. Some, although quite limited efforts, have been pulled forth in national and international policies, particularly in the context of patent laws, to promote 'green' types of technological innovations. For instance, a number of national IP offices have put in place measures to fast-track 'green' patent applications, under which the time needed to obtain a patent can be significantly reduced (from several years to just a few months).[27] However, these attempts are quite limited and too specific for being able to genuinely foster sustainability values into IPR.

Overall, it can be quite confidently argued that the current IP system relies heavily on exceptions and limitations as a balancing mechanism between protection and other societal interests. Thus, exceptions and limitations are usually the main source where societal related arguments are confined. As previously mentioned, however, notwithstanding the importance of exceptions and limitations for this purpose, the downside of this approach is that it might

[23] See for e.g. *Oliver Brüstle v Greenpeace E.V.* (C-34/10) EU:C:2011:669; [2011]; *Onco-Mouse* (T 0019/90) EP:BA:1990:T001990; [1990]; *Relaxin/Howard Florey Institute* (T 0272/95) EP:BA:2002:T027295; [2002] at *[4], [6]–[7]; cf. Howard Florey/Relaxin [1995] EPOR 541; Cf. Breast and ovarian cancer/UNIVERSITY OF UTAH* (T 1213/05) EP:BA:2007:T121305; [2007]; *Mutation/UNIVERSITY OF UTAH* (T 0666/05) EP:BA:2008:T066605; [2008] *and Method of diagnosis/UNIVERSITY OF UTAH* (T 0080/05) EP:BA:2008:T008005; [2008].

[24] See EPO Guidelines for examination Part G-II, 4.1. Available at: *https://www.epo.org/law-practice/legal-texts/html/guidelines/e/g_ii_4_1.*html (accessed 31st May 2019).

[25] In accordance to the Common Position 2001/931/CFSP on the application of specific measures to combat terrorism [2001] OJ L 344 adopted by the Council of the EU.

[26] EUIPO Guidelines for Trade mark, Part B, Section 4, Chs 7 and 9. Available at: *https://euipo01app.sdlproducts.com/1004922/903898/trade-mark-guidelines/section-4-absolute-grounds-for-refusal* (accessed on 3rd May 2019).

[27] The first program was established by the UK in May 2009, followed by Australia, Israel, Japan, the Republic of Korea (ROK) and the US. Later, also Canada (in March 2011), Brazil and China (in 2012) launched similar programs.

cause a strong property right approach to prevail over other important societal interests. First, as shown already in multiple occasions, such an approach leads to difficulties in implementing new exceptions and limitations when new societal needs emerge. Second, even when implemented, they tend to be formulated narrowly. In other words, conceiving sustainability as a *negative* variable, i.e. as an exception to the main rule, does not enable the goals of a 'strong' sustainability approach.

The next session considers two key case studies related to sustainable innovation and sustainable practices, that is the case of the sharing economy and the case of the circular economy. These cases are used to shed light over areas where the existing IP framework in Europe is currently creating obstacles for promoting and reflecting environmental sustainability values in IPR protected technological developments and deployments. Special attention is posed on the principle of exhaustion, which seems to be the place where major obstacles to reflect 'strong' sustainability into the IP framework arises. The purpose for using these examples is twofold. On the one hand, we aim at illustrating how the current IP system does not fully embed sustainability, while on the other, we demonstrate that a narrow-approach that addresses environmental sustainability concerns only from the perspective of exceptions and limitations is unsuitable for fostering 'strong' sustainability. A holistic, bottom-up approach is instead necessary.

## 4. Sharing and Circular Economy Models to Foster Sustainable Innovation

### 4.1 The relationship between sharing and Circular Economy models and IPRs

Concepts like the sharing economy (SE) and the circular economy (CE) have nowadays evolved and spread to various market sectors. Both structures are part of a movement that encompasses several models for promoting wiser uses of resources and more sustainable business models. Both the SE and the CE, in fact, hold promises for providing with new ways of increasing economic benefits, while offering services that could save energy, reduce waste and bring communities together by sharing their resources and time.

The concept of the SE encompasses various activities whereby resources, such as products and personal items, are made accessible for others to use, typically in or via the online environment.[28] The SE promotes collective utilisation, access, and reuse of (existing) resources rather than sole ownership and production of new items, while building on peer networking and collaboration. The CE, instead, is a new industrial model that aims to reduce waste and optimize the use of resources. The CE focuses on *inter alia* 'reuse, repair, recycle, eco-design, sustainable supply and responsible consumption', as opposed to a linear model of consumption based on a 'take, make, waste' philosophy.[29]

[28] See definition provided by the European Commission on "Collaborative Economy". Available at: *http://ec.europa.eu/growth/single-market/services/collaborative-economy_en.*

[29] D. Gaullard and L. Blandine, *Circular Economy, Industrial Ecology and Short Supply Chain: Towards Sustainable Territories* (Hoboken: John Wiley & Sons, 2016), Vol. 4, p. 1.

Reaching the goals of both the SE and the CE heavily depends on decisions and choices by legislators, policymakers and business entities.[30] The IPR system may play a crucial role in providing the right incentives for accelerating developments and diffusion of the innovations needed to meet the desirable effects of the SE and the CE. Yet, challenges exist under the current system that impose obstacles and should be tackled accordingly. Amongst these, the principle of exhaustion represents a major one.

The current European legal system, in general, and the IPR regime especially, tend to promote a model where access to goods (and services) is based on linear models of consumption and ownership, which are often not in line with the requirements and principles of neither the sharing nor the circular economies.[31] Indeed, the fact that both the SE and the CE rely on the acts of *repairing and reusing* -instead of purchasing new-, *sharing and lending* -instead of owning-, and *recycling* -instead of disposing- might actually collide with several of the restrictive acts forbidden by IPR. For instance, copyright law forbids, amongst others, possibilities for copying, making available to the public, and distributing protected works, while patent rights do not allow third parties to use, re-use or make copies of the patented invention. Trade mark rights create a rather extensive exclusive right to forbid others to utilise a trade mark in commerce.

In principle, large part of those activities could be allowed by the doctrine of exhaustion. The principle of exhaustion limits the extent to which IPR holders can enforce their rights on a sold protected product after it has entered the market with the right holder's consent. It is important to note that exhaustion never concerns IPR in a certain good, but rather applies to *a copy* of that specific good sold by or with the consent of the right holder. Moreover, traditionally, it has been argued that exhaustion only concerns physical objects of protected products, while does not apply to services.[32] The principle of exhaustion exists in all EU countries, although in different forms, such as through statutory provisions or case law interpretations. Theoretically, this principle plays a key role in enabling possibilities for sharing, reusing, repairing and recycling protected *goods* in both a SE and a CE context: as the copy of the sold good is no more protected by IPR, it can be shared, distributed, as well as used, re-used and repaired without the proprietor's consent. This notwithstanding, however, the application of the exhaustion principle in the settings conceived by both the SE and the CE becomes problematic

[30] Mateusz Lewandowski, "Designing the Business Models for Circular Economy –Towards the Conceptual Framework" (2016) Sustainability 8(1). Available at: *http://www.mdpi.com/2071-1050/8/1/43* (accessed 31st May 2019).

[31] Mähönen points out that at the same time, short-term oriented legal systems often support linear models of consumption, which are not necessarily in line with the requirements of the circular economy, Jukka Mähönen "Financing Sustainable Market Actors in Circular Economy" (2018) University of Oslo Faculty of Law Research Paper No 2018-28 1. Available at SSRN: *https://ssrn.com/abstract=3273263* (accessed 31st May 2019).

[32] See InfoSoc Directive recitals (28) and (29) and art. 4(1), a formulation of which demonstrates that distribution was meant to cover only transfer of ownership of tangible copies. See also Ulla-Maija Mylly, "Patents and Computer Program Interoperability in Europe. Are the Exceptions in Current Patent Laws and the Proposed Unitary Patent Protection Sufficient?" (2012) Vol 81(4) Nordiskt Immateriellt Rättskydd (NIR) 375–402 and Anna Haapanen, *Free and Open Source Software Licensing and the Mystery of Licensor's Patents*, (University of Helsinki, 2017). Available at: *https://helda.helsinki.fi/handle/10138/177034* (accessed on 3rd May 2019).

from multiple angles, as the rights conferred by, for instance, copyright, patents, trade marks and design rights are often interpreted widely and commercial activities targeted at sharing, reusing, repairing and recycling protected products are easily considered as *prima facie* infringements.

### 4.2. Patents: Repairing versus Reconstructing

In patent law, as with other IPR, once a patented product is put into the market with the authorization of the patentee, the patentee no longer has any enforceable right to control the subsequent resale, importation or *use* of that same physical item within the domestic market.[33] In other words, the purchaser's right to use is supported by the exhaustion doctrine. From the SE and CE perspective, the most essential feature in the exhaustion principle is drawing a line between (permissible) repair and (unpermissible) reconstruction of a patent protected item. In fact, even though the loan and *ordinary repair* of the product are covered by the exhaustion principle, such ordinary repair (including maintenance) is allowed only insofar as it does not equate to 'making' the invention. The distinction between 'making' versus 'repairing', however, is not straightforward. Although making copies of someone else's patented invention is an infringement, it is not clear whether and to what extent purchasing a patented item and subsequently modifying it or repairing it is allowed. For instance, whether repairing a patented product by replacing parts of it qualifies as 'ordinary' repair, or constitutes instead 'making' the invention and, as such, infringing upon the rights of the patentee is a question that often needs to be addressed on a case-by-case situation. The difficulties in distinguishing between repairing and making, become more complex when it comes to patented products that need to be refilled, giving third parties the opportunity to provide substitutes for parts of the patented invention alongside refills.[34] Arguably, these could be common situations where sustainability arguments could be raised.

Generally speaking, there is no real agreement on the interpretation of 'repair' in the EU[35]. The notion of 'repair' is not mentioned in any patent statute in Europe and national case law on the issue is scarce. Overall, the factors that are usually taken into consideration by European courts when deciding on issues of 'making' as opposed to 'repairing' patented products include:

(1) Whether and to what extent the *technical effects* of the invention are embodied by the component replaced. In other words, does the part in question form part of the inventive character of the product and, as such, reflect the technical effects of the patent?

[33] See, for instance, Agreement on a Unified Patent Court (UPC Agreement) [2013] OJ C 175 art. 29.
[34] See R.M. Ballardini, M. Norrgård and T. Minssen, "Enforcing Patents in the Era of 3D Printing" (2015) 10(11) Journal of Intellectual Property Law and Practice 850–866.
[35] UPC agreement art. 29 contains a provision on exhaustion. It is possible that the details of exhaustion will be harmonized in the practice of the Unified Patent Court. However, even if this project will ultimately succeed, this is only a partial solution due to the fact that defendants might still face claims for infringement of national patents.

(2) The *need* for repair of the product (estimated with respect to the normal working life of the device). For instance, was the spare part in question expected to be replaced during the normal working life of the product?

(3) The *extent of the repair* compared with the manufacturing process of the original product. Do the measures taken to repair the patented product maintain its identity as it was entered into the market, or do they equate to creating a new product?

(4) The *extent* to which the repaired part *competes with the original parts*.[36]

This notwithstanding, however, the concept of permissible 'repair' is interpreted with differences in the EU MS. In fact, different European courts have disagreed on whether and to what extent *producing, transforming, assembling* or even *building* a product is legitimate (i.e. whether it counts as 'ordinary' repair or not). Indeed, it could be possible that the national interpretations might be favourable for right holders, this way possibly contradicting the aims of modern SE and CE thinking.[37] The threshold of "normal working lifespan", that is currently considered as the basis for allowing repairs of a protected product, for instance, might lead to unbalanced results when considering recycling activities. This is because 'unsustainable', short-life-span and not-renewable goods might be considered as normal in society. Moreover, patent holders way of, for instance, marketing, presenting or planning the product might impact on how the consumers perceive the product´s lifespan. [38]

### 4.3. Design Rights, Alterations and Repairing Spares

Design rights, which have been extensively harmonised in the EU[39], cover the exclusive right to use a protected design, "in particular, the making, offering, putting on the market, importing, exporting or using of a product in which the design is incorporated or to which it is applied, or stocking such a product for those purposes"[40]. Although exhaustion of the protected design occurs when a product has been put on the market in the EU by the rightholder or with their

[36] See, for instance, *United Wire Ltd v Screen Repair Services (Scotland) Ltd* F.S.R. 24 HL [2001]; *Schütz (UK) Ltd v Werit (UK) Ltd (Rev 1)* [2013] UKSC 16 (13 March 2013); BGH 14.07.1970, GRUR 1971, 78, 80 *Diarähmchen V, BGH 17.07.2012, docket no. X ZR 97/11 Palettenbehälter II, available in German at: http://juris.bundesgerichtshof.de/cgibin/rechtsprechung/document.py?Gericht=bgh&Art=en&sid=3c6d49f845dcefd695bb195c4e4722bb&nr=61447&pos=0&anz=1*. See the English translation in IIC, Pallet Container II (Palettenbehälter II) (2013) 44 at 351–360, 351, DOI 10.1007/s40319-013-0044-3; Trommeleinheit [Drum Unit] – court docket: X ZR 55/16, GRUR-Prax 2018, 50 of the 24th of October 2017.

[37] See R.M. Ballardini, I. Flores-Ituarte and E. Pei, "Printing Spare Parts Through Additive Manufacturing: Legal and Digital Business Challenges" (2018) 29(6) Journal of Manufacturing Technology Management 958–982; T. Pihlajarinne, "Repairing and Re-using from an Exclusive Rights Perspective – Towards Sustainable Lifespan as Part of a New Normal?" in *IP and Sustainable Markets* (Cheltenham: Edward Elgar, 2020, forthcoming); R.M. Ballardini and A. Alen-Savikko, "IPR and the Sharing Economy" in *Jakamistalous-Juridiikka* (Helsinki: Alma Talent, 2019), pp. 381–408.

[38] See more detailed, T. Pihlajarinne, "Repairing and Re-using from an Exclusive Rights Perspective – Towards Sustainable Lifespan as Part of a New Normal?".

[39] See Directive 98/71 on the legal protection of designs [1998] *OJ L 289* (DD) and European Council Regulation 6/2002 on Community designs [2002] *OJ L 3* (DR).

[40] See DD art. 12 and DR art. 19.

consent[41], alterations of the original product are usually not allowed.[42] This makes it possible for rightholders to control over CE and SE related activities, which typically require alterations of products.

A key example in the context of the SE and the CE relates to the possibility to use and repair spare parts covered by design rights. Issues related to protection of repairing spares in context of complex products, like cars, has been highly debated and controversial in the EU. Both the Design Directive and the Regulation confer protection for complex products "composed of multiple components which can be replaced permitting disassembly and re-assembly of the product"[43]. Article 110.1 (the so called 'repair clause') of the Design Regulation excludes replacement parts and accessories (so called 'must-match' parts) from design protection, to the extent that they are used to restore the original appearance of the product. This repair clause was designed to enable independent manufacturers to provide customers with spare parts for repair purposes at cost-effective prices by freeing them from potential infringement claims. Indeed, many manufacturers (especially in the car industry) have fought against this provision, as they considered it to be a weakening of their IP rights. In addition, it has been a matter of some debate which elements of a car are even covered by the clause; for example, does it include accessories, such as wheel rims?

The CJEU have recently clarified that the scope of the repair clause is not limited to components whose shape is determined by the appearance of the complex product. This is good news, as it means that the repair clause covers all spare parts regardless the shape.[44] At the same time, however, the Court added that the clause is only applicable when the repair "serves to restore the original appearance" ("visually identical"). This interpretation might impede some of the CE or SE -related acts. On the other hand, a positive aspect from CE and SE perspectives is that the concept of 'use' should be interpreted broadly and is to include all forms of use of a part for repair purposes, such as: "the making, offering, putting on the market, importing, exporting or using of a product in which the design is incorporated or to which it is applied, or stocking such a product for those purposes"[45]. Lastly, a person who invokes the repair clause is under a duty of care to ensure that 'downstream users' act in compliance with the requirements of the repair clause, although the manufacturer or seller of a component of a complex product is not obliged to objectively guarantee that end users ultimately act in complete compliance with the outlined conditions.[46]

[41] See the European Design Directive art. 15.
[42] For instance, in BGH 1-ZR 89/08 Verlangarete Limousinen a company had acquired Daimler cars and widened them by adding a section in the middle. The ad put them on the market. The Bundesgerichtshof concluded that the exhaustion doctrine was not applicable because the product clearly deviate from the standard version cars that the rightholder had put on the market.
[43] See DD art. 1(c) and DR art. 3(c).
[44] See *Acacia Srl v Pneusgarda Srl and Audi AG and Acacia Srl and Rolando D'Amato v Dr. Ing. h.c.F. Porsche AG* (C-397/16) EU:C:2017:992; [2017].
[45] DD art. 12 and DR art. 19.
[46] For further details see eg. Jane Cornwell, "Nintendo vs BigBen and Acacia vs Audi; Acacia vs Porsche: Design Exceptions at the CJEU" (2019) 14(1) Journal of Intellectual Property Law & Practice 51–61. Available at: *https://doi.org/10.1093/jiplp/jpy116* (accessed 31 May 2019).

Notwithstanding these possibilities allowed by the Regulation, however, there is no similar clause in the Directive. Article 14 of the Design Directive (so called "freeze plus -provision") states that "Member States shall maintain in force their existing legal provisions relating to the use of the design of a component part used for the purpose of the repair of a complex product so as to restore its original appearance and shall introduce changes to those provisions only if the purpose is to liberalise the market for such parts". This provision represented a compromise and it was aimed to be in force only until the Commission would make a proposal for amendments. At the same time, Article 18 stated that a review shall be made by the Commission on the spare parts provision. The review, conducted in 2004 stated that it was the right time to adopt a clause that would make it possible for others than rightholders to supply a replacement part using an identical design. [47] However, there has been no progress after that and the proposal was withdrawn in 2014. The outcome is the lack of harmonisation of this issue[48] and the fact that in many member states (for instance, in Germany) repair activities are impeded by the fact that the national law and / or case law do not offer possibilities to use unauthorised spares.

### 4.4. Copyright: Sharing, Reusing and Lending

Generally speaking, the digital environment has shown to have great potential to expand the scope of copyright protection. For instance, due to the easiness of digital copying, very many actions are potentially copyright infringements because of the broad interpretation of the concept of reproduction.[49] The combination of extensive rights and narrow exceptions and limitations in relation to activities, like reproduction, that are essential to CE and SE activities, does not support sustainable business models and activities.

Article 4 of the InfoSoc Directive regulates the exhaustion of the distribution right of the copyright holders "where the first sale or other transfer of ownership in the Community of that object is made by the rightholder or with his consent". Moreover, the exhaustion of the exclusive right of distribution is regulated in the Software Directive[50] Art. 4(2) (in relation to software works), the Database Directive[51] Article 5 (for database works), as well as in the

[47] Proposal for a Directive amending Directive 98/71/EC on the legal protection of designs (SEC(2004) 1097) COM(2004) 0582 final-COD 2004/0203.

[48] There is a fundamental difference in arguments that are favor and against such a clause in the way of how IPRs aim is seen in primary and secondary markets. See D. Beldiman and C. Blanke-Roeser, "European Design Law: Considerations Relating to Protection of Spare Parts for Restoring a Complex Product's Original Appearance" (2015) 46(8) IIC 915–919.

[49] The act of reproduction is regulated, for e.g. in the InfoSoc Directive arts 2 and 5. These articles have been interpreted in various occasions. For instance, in the case *Infopaq International A/S v Danske Dagblades Forening* (C-5/08) EU:C:2009:465; [2009] decision, the CJEU decided that an act consisted of storing an extract of a protected work comprising 11 words and printing out that extract, was an act of reproduction. For more details, see also T. Pihlajarinne, "Non-traditional Trademark Infringements" in *3D Printing, Intellectual Property and Innovation. Insights from Law and Technology* (Apphen aan den Rijn: Kluwer Law International, 2017), 303–316.

[50] Directive 2009/24 on the legal protection of computer programs [2009] OJ L 111.

[51] Directive 96/9 on the legal protection of databases [1996] *OJ L 77* (Database Directive).

Rental and Lending Directive[52] Article 9 (in relation to rental and lending of originals and copies of copyright works).

One major case interpreting exhaustion in copyright in the EU is *UsedSoft*[53], where the CJEU had to answer the question whether or not the distribution right of a computer program was exhausted according to Software Directive Article 4(2), if the buyer has himself made the copy after having downloaded the program via the Internet. Focusing on the material copy that resulted after the download, rather than on the act of offering the program for downloading, the CJEU held that the distribution right with regard to that particular copy is exhausted, as far as the copyright holder had conferred a right to use that copy for an unlimited period of time. The court concluded that in these circumstances, this was a *de facto* transfer of ownership. This interpretation was, however, limited to the holding of the Software Directive. In the follow-up the case Art & Allposters C-419/13 the court further expanded the interpretation of the exhaustion doctrine to works that go beyond software and concluded that the applicability of the principle of exhaustion depends on "whether the altered object itself, taken as a whole, is physically the object that was placed onto the market with a consent of a rightholder".[54] In the case, the medium was altered, as the paper-based copies were transferred into a form of canvas. The case demonstrates the traditional principle followed in copyright exhaustion according to which the physical transformation due to which the work is, as whole, considered as a new object, prevents the application of the exhaustion doctrine.[55] Indeed, one could interpret the decision as a guideline that reselling other digital content then software, is likely not subject to exhaustion.[56] This sets a narrow space for many acts in a SE or CE based society, where in essence of which are often alterations are often necessary in order to lengthen thea lifespan of the work or to make the work more usable. This aspect is relevant both in the digital and the analogue environment, for instance when considering repair activities targeted at items of applied art or digital transformations. At the same time, however, especially in view of the Microsoft decision[57], it remains particularly unclear whether and to what extent the *UsedSoft*'s conclusion can be extended to works other than computer programs and that fall under the scope of the InfoSoc Directive. For instance, Mezei notes that one remarkable difference between the software Directive and the Infosoc Directive is that, when considering exhaustion, the software Directive does not make a difference between tangible and intangible copies. In contrast, according to the Infosoc Directive, only intangible copies are applied under the doctrine. However, it should not be the subject matter, i.e. the work type, that is decisive, but

[52] Directive 2006/115 on rental right and lending right and on certain rights related to copyright in the field of intellectual property [2006] OJ L 376.
[53] *UsedSoft v. Oracle International* (C-128/11) EU:C:2012:407; [2012].
[54] *Art & Allposters International BV v Stichting Pictoright* (C-419/13) EU:C:2015:27; [2015].
[55] Similarly P. Mezei, *Copyright Exhaustion, Law and Policy in the United States and the European Union* (Cambridge: Cambridge University Press, 2018), pp. 48–49 and Toby Headdon, "The Allposters problem: Reproduction, Alteration and the Misappropriation of Value" (2018) 40(8) European Intellectual Property Review 501, 503, pp. 501–509.
[56] *Art & Allposters International BV v Stichting Pictoright* (C-419/13) EU:C:2015:27; [2015].
[57] *Aleksandrs Ranks and Jurijs Vasiļevičs v Finanšu un ekonomisko noziegumu izmeklēšanas prokoratūra and Microsoft Corp* (Case C-166/15) EU:C:2016:762; [2016].

whether the work is distributed in a tangible or intangible medium. In that respect, for instance, Mezei makes an argument that the UsedSoft decision violates international copyright treaties.[58]

As previously mentioned, both the SE and the CE aim at promoting collective utilisation, access, and reuse of (existing) resources rather than sole ownership and production of new items, while building on peer networking and collaboration.[59] In principle, developing business models around these types of activities is expected to be more sustainable and environmentally-friendly. At the same time, however, the alleged narrow interpretation as to what extent the exhaustion principle applies in regard to distribution of copyright protected works imposes clear obstacles for such business models to arise. On the one hand, a large part of the sharing and lending activities taking place in a SE or CE setting occur in the digital world, where for instance digital copies of books, as well as objects (e.g. CAD files) are distributed. As such, interpreting the exhaustion principle so that only digital distribution of software is subject to exhaustion, while digital distribution of other digital object is not, is limited at the least. On the other hand, however, it is understandable to some extent that expanding the reach of exhaustion to cover any digital distribution of protected works, could pose an unbalanced situation in respect to the right holders. For instance, from the practical point of view, it can be argued that, unlike analogue/physical copies, in principle the digital copy of a work is not subject to any sort of appreciable degradation although digital copies as such can be altered in many ways.[60] Moreover, the issue of control of the work comes into play, as greater control can be exerted over the transmission of a physical copy, while with digital copies it is more difficult to make sure that the person to whom the work is transferred just keeps the original copy without creating a new one. However, many of these problems could be tacked by technological protection measures.[61] In addition, it should also be noticed that on the one hand, the exhaustion of copyright only applies to the right of distribution and, on the other, services do not exhaust[62] - all this further limits possibilities for sharing, reusing and lending protected items. Indeed, these shortcomings are examples that, as with the case of patent rights, highlight the limitations of trying to channel environmental types of arguments indirectly and only via relying on exceptions and limitations to the exclusive rights.

### 4.5. Trade Marks and Recycling

An EU-wide trade mark shall not entitle the proprietor to prohibit its use in relation to goods which have been put on the market in the European Economic Area under that trade mark by

[58] Mezei, *Copyright Exhaustion, Law and Policy in the United States and the European Union*, pp. 133–138.
[59] See for instance the definition provided by the European Commission on "Collaborative Economy". Available at: *http://ec.europa.eu/growth/single-market/services/collaborative-economy_en* (accessed 31 May 2019).
[60] For a comparison arguing that the differences between material and digital markets justify the ban from digital exhaustion, see A. Wiebe, "The economic perspective: exhaustion in the digital age" in *Global Copyright Three Hundred Years Since the Statue of Anne 1709 to Cyberspace* (Cheltenham: Edward Elgar, 2010), pp. 321–328.
[61] For instance, Mezei suggests adoption of a system of unique ID-numbers inserted in the metadata of each digital file, combined with blockchain technology used for conclusion of smart contracts for digital sales. Mezei, *Copyright Exhaustion, Law and Policy in the United States and the European Union*, pp. 160–161.
[62] See for e.g. Report on the implementation and effects of Directive 91/250/EEC on the legal protection of computer programs, COM(2000) 199 final 17; Follow-up to the Green Paper on Copyright and Related Rights in the Information Society COM(96) 568 final, Ch. 2, 19, para 4; Database Directive art. 5(c).

the proprietor or with his consent.[63] This notwithstanding, however, Art. 15(2) of the EU Trade Mark Regulation (TMR) and Art. 15(2) of the Trade Mark Directive (TMD) rule out exhaustion "where there exist legitimate reasons for the proprietor to oppose further commercialisation of the goods, especially where the condition of the goods is changed or impaired after they have been put on the market".

In the context of trade mark, the example of so called 'upcycling' or 'trashion' cases is here used to demonstrate the possible problems in relation to the exhaustion principle and the acts of recycling protected goods. Upcycling refers to the creation of objects, such as bags or jewelleries, used as home-decorative purposes from used products.[64] These products could extend the material´s lifespan and have a positive contribution to consumers´ attitudes towards recycling. In these cases a trade mark might be a key feature of a product for the consumer due to its attractiveness in completely different recycled products. In fact, a trade mark might in these cases serve as an indication of recycling, although this kind of function is a reflection of the origin function of the product utilised as raw material. Usually, when a trade mark has changed as a badge of recycling, the risk of confusion might be low despite the fact that the trade mark might form a prominent feature of the product.[65] Using the original product´s trade mark in these "new" products might however be easily counted as trade mark infringement. The requirements for protection of trade marks with a reputation[66] could be fulfilled, because this kind of utilisation could easily be claimed to include elements that mean, for instance, freeriding to some extent.[67] Additionally, it is highly questionable whether any of the trademark limitations applies to these cases. The principle of exhaustion might not be applied to situations where, due to a stage of alteration, the identity of the original product has been turned into a new, independent product.[68] However, even when the stage of alteration does not as such prevent exhaustion rule to be applied, a trademark holder might prevent further commercialisation of the product in the case of a 'legitimate reason' as meant in Article 15.2

[63] See TMD art. 15(1) and TMR art. 15(1).
[64] See eg, A. Anderson, "Trash or Treasure? Controlling your Brand in the Age of Upcycling" (2009) 129 Trademark 1.
[65] More detailed T. Pihlajarinne, "Repairing and Re-using from an Exclusive Rights Perspective – Towards Sustainable Lifespan as Part of a New Normal?". However, right holders might be suspicious of their trade mark being utilised, eg, see Anderson, "Trash or Treasure? Controlling your Brand in the Age of Upcycling" 1–2, who argues the importance of reacting to this kind of use, eg, stating that in the case of a bag constructed only from cookie wrappers originating from a single trade mark holder, the prominent nature of the trade mark would lead a reasonable consumer to assume that the bag was produced by the trade mark holder or under its supervision. However, Anderson recognises that aggression towards this kind of trade mark utilisation might also result in ill-will associated with the trade mark holder as the trade mark holder could be seen as having little concern about the environmental impact of its products.
[66] See TMD art. 10(2) and TMR art. 8(5).
[67] Trade mark use must mean free-riding (use "takes unfair advantage of the distinctive character of repute" of trade mark) or tarnishing the trade mark's reputation (use is "detrimental to repute" of trade mark) or dilutes the trademark (use is "detrimental to distinctive character" of trade mark). See the CJEU´s preliminary rulings for instance *L´Oréal SA, Lancome parfums et beauté & Cie SNC and Laboratoire Garnier & Cie v. Bellure NV, Malaika Investments Ltd and Starion International Ltd (*C-487/07) EU:C:2009:378; [2009].
[68] About alterations in the context of German exhaustion doctrine, see for instance U. Hindebrandt, *Marken und Andere Kennzeichen*. Carl Heymanns Verlag (2006) pp. 299–301.

of the TMD, "especially where the condition of the goods is changed or impaired after they have been put on the market".[69]

When considering the application of the limitation in the Article 14(1)(b) of the TMD, according to which "A trade mark shall not entitle the proprietor to prohibit a third party from using, in the course of trade [...] signs or indications which are not distinctive or which concern the kind, quality, quantity, intended purpose, value, geographical origin, the time of production of goods or of rendering of the service, or other characteristics of goods or services", it is noteworthy that the CJEU has stated in the *Adam Opel v. Autec AG*[70] and the *Adidas AG et al v. Marca Mode*[71] cases that only such use that indicates the characteristics of the products of the third party utilising a trade mark falls under the scope of this limitation. A trade mark, as an indication of origin, must directly relate to the characteristics of the goods placed on the market. Moreover, the CJEU explicitly stated in the Adidas case that the exploitation of a trade mark for a purely decorative purpose does not amount to such type of use.[72] From this perspective, there is no certainty over whether in upcycling types of cases a trade mark would be considered as a decoration or whether it could be interpreted to indicate an origin of raw-material. From this perspective, trade mark might even be perceived as an indication of recycling. In the latter cases, the use might fall under the limitation set by article 14(1)(b) of the TMD.

### 4.6 Conclusions: challenges in implementing sustainability via exhaustion and related limitations

The afore analysis shows that the exhaustion provision and related limitations to exclusive rights fail in recognising and implementing CE and SE ways of thinking for each of the IP exclusive rights discussed. In details there are differences among the various rights, but the common denominator is that the traditional interpretations of exhaustion provide right holders with an extensive right to control the products, while the space left to repairing activities and alterations is limited. The example of exhaustion and some other limitations show how the idea of strong property rights that prevail over other important societal values has taken the form of a 'structural bias' in our European IP system. Other values, such as sustainability, are diminished.

## 5. The Step Forward: Embedding 'Strong' Sustainability into the Scope of Protection

As the afore analysis explains, the current European IP law system, although including tools for possibly reflecting values like sustainability, does not make much use of such. Instead,

[69] About this problematic, see *Viking Gas A/S v. Kosan Gas A/S* (C-46/10) EU:C:2011:485; [2011].
[70] See A*dam Opel v. Autec AG* (C-48/05) EU:C:2006:154; [2006].
[71] See Opinion of AG Ruiz-Jarambo, A*dam Opel v. Autec* (C-48/05) EU:C:2006:154; [2006].
[72] For instance Kur criticizes the division between using a trademark as an element of a good or an element that indicates something on the good, A. Kur, "Small Cars, Big Problems? – An analysis of the ECJ´s Opel./.Autec Decision and its consequences" in *Festskrift till Marianne Levin* (Stockholm: Norsteds Juridik, 2008), p. 343, pp. 329–352.

societal principles traditionally enter into the IPR room via the backdoor of the exceptions and limitations. On the one hand, this is untenable - 'strong' sustainability cannot be pursued if only considered as an exception to property rights. On the other, this analysis showed that the architecture of the existing system already includes tools for a 'strong' sustainability approach to prevail - this means that it is possible to actually combat climate change and loss of biodiversity, but we need to give the IP framework a new sense of purpose and make remarkable changes into its structures accordingly. Indeed, this requires a systematic change in the way we currently conceive and justify the existence of IP rights. Fostering sustainability needs to become as important a priority as it is to provide incentives to innovate. Unless sustainability is embedded as a core principle into these frameworks, and considered by businesses as important a target as incentives to innovate and profit, realistic paths for IP to foster 'strong' sustainability cannot be achieved.[73]

In this context, key elements relate to the way we currently conceive ownership of intangibles, as well as how we interpret the scope and reach of protection and exclusive rights - in here we mostly focus on the latters. Notably, utilitarian theories justify protecting IP for the purpose of creating an incentive for innovative and creative activities: by awarding an exclusive right to the creator of an artistic work or the inventor of a technical innovation, the government provides the rightholder with *inter alia* the ability to hinder a competitor from utilizing that creation or invention. From an economic point of view, the rightholder obtains a temporary 'monopoly' limited in scope and enforceable for a specified period. In the discourse about finding an appropriate balance between protection and access, the role of IPR to cover R&D costs for innovating, as well as issues of efficiency and maximisation of profit, are prevalent - since the costs of creation are supposedly high, while the costs of copying and distributing lower, without IPR the production of innovations would not be efficient.[74]

As Jaffe, Newell and Stavins explain, both the need for protecting IPRs and regulation that aims to protect the environment are results of market failures.[75] Therefore, when considering sustainable innovations and creations (touched by both the aims of creating incentives to innovations and creations and aims to protect environment), the simultaneous existence of two sets of market failures significantly decreases the probability for the free market mechanism to

[73] See also An Open Letter to Greta Thunberg from a Gen-X Investment Banker (and a Plea for Working Together). Available at: *https://medium.com/@sasjasocial/an-open-letter-to-greta-thunberg-from-a-gen-x-investment-banker-and-a-plea-for-working-together-d3b299e5df73*. See also L. Butler, "Property's Problem with Extremes" (2018). Available at SSRN: *https://ssrn.com/abstract=3277500orhttp://dx.doi.org/10.2139/ssrn.3277500*.

[74] For information about general theories for justifying IPR see: Hughes, "The Philosophy of Intellectual Property" and W. Fisher, "Theories of Intellectual Property" in *New Essays in the Legal and Political Theory of Property* (New York: Cambridge University Press, 2001), p. 168. Available at: *https://cyber.harvard.edu/people/tfisher/iptheory.pdf* (accessed 31st May 2019). See also John Locke, *Two Treatises of Government*, Sec. 27.

[75] A polluter derives benefit from polluting and the costs of polluting are paid by others. In the case of technology there is a reserved problem: as a starting point, a firm that invests to the technology creates benefits for others by the investing firm´s costs. See A. Jaffe, R. Newell and R. Stavins, "A tale of two market failures: Technology and environmental policy" in *Intellectual Property, Innovation and the Environment* (Cheltenham: Edward Elgar, 2005), p. 225, p. 234, pp. 225–234.

work in a way that the outcome is socially optimal.[76] Therefore, a careful weighing and balancing between the aims relating to protection of creative and innovative work and sustainability must be conducted, by integrating sustainability into the IPR system.

The proprietary elements of IPR are safeguarded under the umbrella of fundamental rights to property, this way linking the way we conceive 'ownership' in intangibles to how such concept is understood in tangible property. Moreover, links to other fundamental rights, such as free speech and freedom to conduct a business, exist especially in relation to copyright and trade mark.[77] Indeed, as mentioned above, the IPR regime entails both technological and *social* innovation, with the latter being largely intangible and having as its primary goal the *value for society at large* rather than the benefit for private stakeholders only. On the one hand, this means that, despite their exclusivity nature, IPR also imply 'inclusion', as well as 'sharing' and 'reusing'. On the other, and most importantly, all this indicates that the idea behind the IPRs already includes a space for important societal values, like sustainability, to be taken into account. In other words, lifting up sustainability as a major guiding principle in IP law would not distort this legal regime's identity. Instead, it would actually reinforce it to better reflect up-to-date societal priorities. Concretely, embedding sustainability as one core principle of the IP regime, could open up several options for using the existing IP tools to foster 'strong' sustainability at all levels, including the level of exceptions and limitations, but also, and especially, at the stage of protection and scope of exclusive rights, as well as enforcement.

Amongst the possible doors this approach could open, for instance, at the level of granting of registered rights like patents and trade marks, additional incentives to sustainable types of innovations could be provided via including sustainability in the interpretation of concepts like ordre public, public policy and morality: inventions or signs that are considered as not sustainable should be banned from protection. Alternatively, a lighter option could be to include for instance stronger protection, longer duration, or quicker examination for sustainable innovations.[78] At the same time, however, the IPR system should promote diffusion of sustainable innovations, as too high transaction costs can hinder the diffusion. The system should also recognise the need to support follow-up innovations.[79] In this regard, concepts like the one of "inclusive patents" developed by Van Owervalle could provide with a feasible way to enable collaboration in innovating with other parties.[80]

[76] A. Jaffe, R. Newell and R. Stavins, "A tale of two market failures: Technology and environmental policy" p. 234.

[77] See, for instance, Laurence R. Helfer and Graeme W. Austin, *Human rights and Intellectual Property. Mapping the Global Interface*, (New York: Cambridge University Press, 2011).

[78] There are some precedents, e.g. in the case of rare diseases and orphan drugs.

[79] See P. S. Menell and S. M. Tran, "Introduction" in *Intellectual Property, Innovation and the Environment* (Cheltenham: Edward Elgar, 2014), parts xi–xv.

[80] "Inclusive patents" refer to "a one-sided right geared to include rather than to exclude others, and encompasses as an attribute the right to enforce sharing behaviour and take non-sharing users to court. The inclusive patent is further conceived as a registration patent obtainable at low cost". See G. Van Overwalle, "Inventing Inclusive Patents. From Old to New Open Innovation" in *Kritika: Essays on Intellectual Property* (Cheltenham: Edward Elgar, 2015), Vol. 1, p. 206, pp. 206–277. Available at *SSRN:https://ssrn.com/abstract=2705109.* (accessed 31st May 2019).

The concept of sustainability should be used also to foster innovative ways to repair and recycle protected goods. In order to include the sustainable concept also in cases of non-literal infringement, an option could be to take the idea of a 'sustainable' lifespan as a core principle to consider within the scope of all the exclusive rights. [81] In that case, only acts that go beyond the genuine purpose of maximising the lifespan of a product would constitute an infringement. In context of product patents, for instance, this could mean to include in the doctrine of equivalents a condition according to which only those acts of making, using or selling that go beyond the purpose of maximising the lifespan of the patented product would be considered as patent infringements. In the trade mark context, this could mean that in cases where the ultimate focus of trade mark use is not on the badge of origin type of purpose and the use is considered feasible from the sustainable business model point of view, should be out of the scope of trade mark rights and, thus, not constitute infringement. This is based on the idea that a tendency to consider non-typical uses of a trade mark where a trade mark is perceived as something else as a badge or origin, as prima facie trade mark infringements, reflects a strong property right perspective. However, such utilisation does not *directly* interfere with the most essential function of the trademark, which is to guarantee the origin of goods and services. If such use is feasible from sustainability viewpoints, it should not be counted as infringement. Flexibilities under the rules conferring rights should be used also also to foster innovative ways to recycle.[82]

In addition, the idea of sustainable lifespan could redirect utilisation of resources also in copyright and design law. In the context of design, the exclusive rights should only cover such making, offering, putting on the market, importing, exporting or using which main purpose is beyond that of to maximising the lifespan of the object protected by the design right. In copyright, by embedding the principle of sustainable lifespan into the economic rights, such as the reproduction right, the making available to the public and the distribution right, it would be possible to redirect incentives towards increasing utilisation of intangible copies instead of only tangible ones. Enabling wider possibilities to utilising digital copies, would allow a better realization of some of the visions sealed in both the SE and the CE, such as activities related to the lending, reusing and reselling of (protected) subject matters. Infringement activities, could then be construed in a similar way as in patent law. For example, the act of reproduction and distribution would be counted as copyright infringements only in cases that the main purpose of the act is not that of to maximising the lifespan of the tangible copy of work.

[81] Pihlajarinne has suggested this as a primary solution in contexts of patents and trademarks, see T. Pihlajarinne, "Repairing and Re-using from an Exclusive Rights Perspective – Towards Sustainable Lifespan as Part of a New Normal?". As a secondary, first aid -type of option she suggested revisiting the "normal lifespan" idea in patent law. Instead a threshold of a 'normal, sustainable lifespan for that particular category of product', or an 'environmentally-friendly lifespan' could be applied. This would mean a transformation from the idea of what the lifespan of a product to an idea of what it should be, that is, how long the product should work in a sustainable-based society. This is, however, not be the best option since it is beyond correcting the ultimate problem which is the structural bias. T. Pihlajarinne, "Repairing and Re-using from an Exclusive Rights Perspective – Towards Sustainable Lifespan as Part of a New Normal?".

[82] Trademark law has proved more flexible than, for instance, copyright law, in facing challenges caused by digitalization. For instance, such fundamental components of trademark law as principle of confusion and commercial use criterion have been under flexible interpretation when applied to trademark use in domain names and search engines using adware. See T. Pihlajarinne, "Non-traditional Trademark Infringements" pp. 306–307.

All these are just examples that show that, on the one hand, embedding sustainability is in fact possible by making changes to the structures of existing IP frameworks and, on the other, that this is actually an important path that the legislator is to take should it really want to foster sustainable innovation and development via IPR.

## 6. Conclusions

As such, the general aims of the IP system contain room for respecting issues that are of utmost importance in society, such as environmental sustainability, in the innovation and ownership framework that it provides. For instance, fundamental theories of justification of IPR undoubtedly enable possibilities for reflecting environmental sustainability into the IP framework. As the sustainable innovations and creations are burdened by two sets of market failures, regulation is needed in order to redirect incentives. As our examples demonstrates, however, the problem lies in the existing fundamental structures of IPR, which reflects a strong property right perspective. The utmost important social values are channeled into the IPR system mainly via exceptions and limitations.

A system that sees sustainability only as an exception to the main rule is untenable in nowadays society, where the environmental challenge constitutes one of the most important problems that developed countries need to tackle. On the contrary, incentives for promoting sustainable innovation and sustainable business models should be embedded directly into the provisions conferring exclusive rights, for instance by to implementing the idea of a 'sustainable' lifespan as a core principle to consider while defining the scope of all the IP rights, as here proposed. Certainly, structural biases in the European IP system is a problem that affects many other important values than sustainability. For instance, one could argue that free flow of information and privacy are both examples of important principles that are struggling to get enough attention via exceptions and limitations. However, because environmental sustainability is, in the end, a question of continuation of modern human life, it should be prioritised.