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the High Court of England and Wales went one step further and suggested that one alternative option to consider is to treat the AI owner as an 'inventor' and then this person would be able to claim the ownership of the patent. This option, however, would deserve additional analysis and it is questionable whether it would be a workable solution under current laws.[86]

2. Policy and academic reports

At normative level, few seem to agree that AI owner *should* be the owner of AI-generated inventions. As mentioned, majority of commentators, such as MPI, do not believe that AI can autonomously generate inventions in the first place,[87] and thus the problem of ownership of such inventions is not discussed in their study. US study also concluded that the vast majority of commentators do not see a need for changes on patent ownership rules and suggested that only a natural person or a company, via assignment, should be considered the owner of a patent or an invention.[88] However, the minority of responses to the US consultation stated that „that while inventorship and ownership rights should not be extended to machines, consideration should be given to expanding ownership to a natural person: (1) who trains an AI process, or (2) who owns/controls an AI system.[89]

In the UK, respondents who agreed that AI can autonomously generate inventions, suggested a more extensive list of alternative solutions to the ownership issue. They suggested that "AI's owner, user, or developer are obvious possibilities for entitlement to an AI-generated invention", and that an AI's owner would be the "most consistent choice with general principles of property ownership".[90] The JIIP/IVIR report suggested three similar options – the programmer or developer of the AI system; the owner of the AI system; and the (authorized) user of the AI system who provided it with training or other data; however, it did not examine which one should be the preferred one.[91]

Thus, similar to other statements, the contention that AI owner should be the owner of AI-generated inventions has so far received no support from decisions makers (patent offices and courts), and is considered as one possible solution – not necessary a preferred one – by stakeholders and academics.

VI. Conclusions

The above analysis aimed to identify the place and role of the DABUS case in a broader international debate. It showed that the claims made by the applicant and his legal team in DABUS case do not show the mainstream opinion on the issues

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[86] Eg if the owner of AI is a legal person it could not be recognized as 'inventor' since, under patent laws, only natural persons could qualify as an inventor.
[87] See above.
[88] USPTO Report, p 7.
[89] USPTO Report, p 7.
[90] UKIPO Report, p 10.
[91] JIIP/IVIR report, p 104.

surrounding AI inventiveness and patent law. First, while DABUS team contend that AI is capable of autonomously inventing, the reports summarizing stakeholder opinions in US and UK, as well as academic reports in continental Europe generally disagree with this claim. A majority of stakeholders, and especially academic experts, suggest that AI is not able to innovate autonomously, now and in the near future. Arguably, humans are actively involved in the inventive process and thus the issue of autonomously AI-generated inventions does not arise at all. Second, while DABUS applicant claims that AI-generated inventions should be protected by patent law, the minority that believes that such inventions are currently possible, do not agree what sort of protection is most suitable. While some opt for patent law, others recommend *sui generis* protection that is supposed to address specific nature of AI-generated inventions and the challenges they cause in innovation space.

Third, DABUS team suggestion that, in AI-generated invention cases, AI can and should be listed as an inventor, has been rejected by all offices and courts so far as well as by most of the commentators. All patent offices and courts that addressed the question have concluded that listing AI system as an inventor is not possible under current patent laws. When analysing whether this inventorship allocation would be a desirable option, stakeholders and comentators did not find consensus on this issue either. The majority seems to suggest that current inventorship rules do not need to be modified since humans who participate in the design of the system could be identified as inventors or co-inventors. Among those who thought that, in case of AI-generated inventions, no human can be identified as an inventor, only few suggested that law should enable listing AI as an inventor, while others discussed other alternative solutions, such as eliminating an inventor concept overall, or listing AI and human contributors as co-inventors. Finally, the suggestion that AI owner should own rights into AI-generated inventions have not received majority support either. Among the minority of commentators who think that new ownership rules are needed, few identify this proposed ownership allocation rule as most suitable, while others consider a variety of options, such as attributing ownership to a developer or a user of AI, without any consensus as to which rule provides the best solution.

Keeping in mind that the views presented by DABUS team seem to represent the niche minority views, rather than majority views, it will be interesting to see how they are going to influence the policy discussion on this topic. So far, it is clear that the case has played different roles in different jurisdictions. In the UK, where the patent applications were initially lodged, the government consultation questions were closely aligned with issues and arguments raised in *DABUS* case and it is likely that the case itself, and its highly public profile, has influenced the UK Report outcomes. In contrast, the US consultation that was conducted a few months earlier and where DABUS case seem not to have achieved such a strong public profile, led to quite different and more conservative outcomes.

At the same time, IP law expert reports, such as those produced by MPI and JIIP/IVIR, while aware of the DABUS litigation, do not seem to be influenced by the statements made in the case. Instead, they clearly rebut all of the arguments presented in the case and draw an opposite picture on AI inventiveness issue. They ar-

gue that, at least currently and in the near future, AI is and will remain a mere tool in innovation, and the discussion on autonomously generated inventions and the need to revise patent system is much too premature. It will be interesting to see which of the opinions will prevail in policy discussions in different jurisdictions and internationally.

MARIE-CHRISTINE JANSSENS* AND VILTĖ KRISTINA DESSERS**

The Artificially Intelligent Consumer in EU Trademark Law

I. *Setting the scene*

1. *Introduction*

Nowadays, both policymakers[1] and legal scholars[2] pay much attention to the impact that artificial intelligence (further as AI) has on intellectual property law. For now, the largest share of the literature covers the domains of copyright and patent law. These fields can already show off great examples such as the 'Next Rembrandt' project[3] and the patent applications filed by alleged AI-inventor 'Dabus'.[4] Research

[1] See, e. g. *WIPO,* Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence, 2020, accessed online at <https://www.wipo.int/meetings/en/doc_details.jsp?doc_id=499504>; *USPTO,* Public Views on Artificial Intelligence and Intellectual Property Policy, 2020, accessed online at <https://www.uspto.gov/sites/default/files/documents/USPTO_AI-Report_2020-10-07.pdf>; *OECD,* World Corporate Top R&D Investors: Shaping the future of technologies and of AI, 2019, accessed online at https://www.oecd.org/sti/world-corporate-top-rd-investors-shaping-future-of-technology-and-of-ai.pdf; all on 2021-07-19. *EU,* Trends and Developments in Artificial Intelligence. Challenges to the Intellectual Property Rights Framework, 2020, accessed online at <https://www.ivir.nl/publicaties/download/Trends_and_Developments_in_Artificial_Intelligence-1.pdf> on 2021-08-04.

[2] See, e. g. *G. Spindler,* Copyright Law and Artificial Intelligence, IIC 2019, 1051; *T. Margoni,* Artificial Intelligence, Machine Learning and EU Copyright Law: Who Owns AI? AIDA, XXVII, 2018, 281; *A. Lauber-Rönsberg* and *S. Hetmank,* The Concept of Authorship and Inventorship under Pressure: Does Artificial Intelligence Shift Paradigms?, JIPL&P 2019, 570.

[3] See, e. g. *Rembrandt AI project,* The next Rembrandt. Can the great master be brought back to create one more painting? accessed online at <https://www.nextrembrandt.com> on 2021-07-19; *S. Yanisky-Ravid,* Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era: The Human-like Authors Are Already Here: A New Model, Mich. St. L. Rev., 2017, 659; *P. Mezei,* From Leonardo to the Next Rembrandt – The Need for AI-Pessimism in the Age of Algorithms, UFITA 2020, 390, accessed online at <ssrn.com/abstract=3592187> on 2021-07-19.

[4] Dabus is an acronym for 'Device for the Autonomous Bootstrapping of Unified Sentience'. Two patent applications were filed at the European Patent Office in autumn 2018, but refused because the formal requirement to designate the inventor(s) (Article 81 jo Rule 19.1 EPC) refers to a human being, not a machine; see decisions of the Board of Appeal of the European Patent Office

on the interaction between AI and trademark law remained limited, however.[5] While the (existence of) interplay between AI and copyright law and between AI and patent law is rather self-explanatory, such interplay appears less straightforward in the area of trademark law.[6] This article will demonstrate that the functioning of AI applications may, however, challenge the application of some traditional notions of trademark law. Specifically, we will focus on applications such as chatbots, voice assistants and recommender systems as well as on assisted product search. Their impact on product selection and, hence on the interaction between the consumer and trademarks, seems obvious. Instinctively, one can expect that such applications must affect the notion of 'the average consumer', which is crucial for trademark law.

It is worth reminding that consumers are at the heart of EU trademark law as the essential function of a mark, as well as some of the accompanying functions of quality, advertising and communication[7] are meaningless without the presence of consumers. Although trademark law protects in the first place businesses by granting exclusive rights, it does so to protect consumers as well. Accordingly, presumptions about the perceptions of 'the average consumer' are decisive in determining crucial issues, such as the distinctive character of a sign or the likelihood of confusion between two signs.

For quite some time now, AI is increasingly used in (e-)commerce thereby influencing consumers' behaviour, particularly their purchasing decisions. It predicts consumers' preferences, makes personalised offers, determines their financial capabilities, to name but a few. As this trend will undoubtedly continue (accelerate) in the future, challenges to the trademark legal framework, that is 'founded upon human participation in purchasing and brand interaction'[8] can hardly be denied. E.g., it seems less likely that 'artificially intelligent consumers' will be as easily confused as the 'average human consumers'. Some authors therefore argue that certain traditional concepts of trademark law may become irrelevant.[9] One can indeed reasonably wonder how the criterion of likelihood of confusion – which underlies the most basic forms of infringement[10] – can be applied in case a purchasing deci-

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regarding patent applications No 18275163.6 and 18275174.3, cases J 8/20 and J 9/20. See also *D. Kim,* AI-Generated Inventions: Time to Get the Record Straight?, GRUR Int. 2020, 443.

[5] The few publications addressing the interplay will be mentioned further in the footnotes of this article.

[6] This is confirmed in a survey in the United Kingdom. Based on almost 100 responses to a call for views on AI and intellectual property, launched by the UKIPO in the fall of 2020, it was concluded that, contrary to copyright and patents, concerning trademarks, respondents generally felt that the law was adequate and flexible enough to respond to the challenges. However, issues were identified which could potentially lead to challenges in the future, and some of which we will include in our analysis. See *Intellectual Property Office of the United Kingdom,* Government response to call for views on artificial intelligence and intellectual property, 2021, accessed at <https://www.gov.uk/government/consultations> on 2021-06-06.

[7] See CJEU in case C-487/07, L'Oréal v Bellure [ECLI:EU:C:2009:378], para 58 and 63; in cases C-236/08 to C-238/08, Google v Vuitton et all [ECLI:EU:C:2010:159], para 77 and 91–92; in case C-129/17, Mitsubishi v Duma Forklifts [ECLI:EU:C:2018:594], para 34.

[8] *Intellectual Property Office of the United Kingdom* (Fn. 6).

[9] *L. Curtis and R. Platts,* AI is coming and it will change trade mark law, Managing Intellectual Property 2017, 9 (12).

sion (the choice of a brand) is influenced by AI? What happens if the perception of the average consumer becomes secondary or even irrelevant? Should notions such as the average consumer be replaced or reconsidered?[11] Uses of AI also raise various other questions such as concerning (secondary) liability (e. g. when AI decides to purchase a counterfeited product) and the subject of such liability as AI systems currently lack legal personality, the application of rules on comparative advertising, the implications for the functions of trademarks[12] and issues of misdirection of consumers (e. g. a voice assistant presenting a consumer with various options of a product to purchase, when in fact the consumer asked for a specific brand of the product).[13] Although we will only address the challenges to the application of the notion of the average consumer in this article, all these questions should be timely addressed as new AI applications are constantly being deployed and become increasingly pervasive.

It is not our ambition to provide clear-cut answers in this article. For the moment, little empirical data exists as to how these tools influence purchasing decisions[14], and some of our considerations remain speculative at this stage. Nevertheless, we hope to make a modest contribution to the debate that should take place in the coming years.[15]

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[10] See Art. 9.2.a and 9.2.b of the Regulation (EU) 2017/1001 of the European Parliament and of the Council of 14 June 2017 on the European Union trade mark, OJ L 154, 16.6.2017, 1 (further as EUTMR).

[11] *V. Dessers (Steponėnaitė),* Trademarks and artificial intelligence: analysis of the emerging issues. Interplay between the artificial intelligence, the traditional notions of the trademark law and the traditional functions of a trademark, Leuven: KU Leuven, Thesis, 2019, 17–28, 40; *V. Dessers (Steponėnaitė),* WIPO draws attention that AI may have an impact on trademark law, CiTiP Blog, KU Leuven Centre for IT & IP Law, 2020, accessed online at <https://www.law.kuleuven.be/citip/blog/wipo-draws-attention-that-ai-may-have-an-impact-on-trademark-law/>; *V. Dessers (Steponėnaitė),* Alexa, are you confused? Unravelling the interplay between AI and (European) trademark law, CiTiP Blog, KU Leuven Centre for IT & IP Law, 2019, accessed online at <https://www.law.kuleuven.be/citip/blog/alexa-are-you-confused-unravelling-the-interplay-between-ai-and-european-trademark-law>; both on 2021-07-19.

[12] See in this regard *J. Randakevičiūtė-Alpman,* The Role of Trademarks on Online Retail Platforms: An EU Trademark Law Perspective, GRUR Int 2021, 633–643; *Dessers (Steponėnaitė),* Trademarks and artificial intelligence (Fn. 11), 29–41; *Dessers (Steponėnaitė),* WIPO draws attention (Fn. 11); *Dessers (Steponėnaitė),* Alexa, are you confused? (Fn. 11).

[13] See questions raised by WIPO: (i) how, if at all, does AI impact trademark law; (ii) are there any concerns raised by ownership of trademarks with respect to AI; (iii) do the functions, law and practice of trademarks need to be reconsidered with the increasing use of AI in marketing and the proliferation of AI used by consumers in the context of Internet of Things applications; (iv) will the use of AI, knowingly or unknowingly, by the consumer for product selection affect brand recognition; will principles of trademark law, such as distinctiveness, recollection, likelihood of confusion or average consumer need to evolve due to the increasing use of AI; are these issues for policymakers to consider; (v) who is ultimately responsible for AI's actions, in particular when recommendations include infringing products; (vi) does the use of AI raise unfair competition issues; is this an issue that the intellectual property system needs to address (Fn. 1).

[14] First steps are taken by, e. g. *E. Moriuchi,* Okay, Google!: An empirical study on voice assistants on consumer engagement and loyalty, Psychology & Marketing 2019, 489.

[15] This article was finalised in August 2021 and therefore does not take into account later developments.

As celebrated Thomas Dreier once wrote: 'Contributions to Festschriften enjoy, among other things, the privilege of being able to deal in some depth and yet only sketchily with detailed problems that are either discussed in detail elsewhere or only touched upon briefly, if they are perceived as legal issues at all.'[16]

2. Structure

In the following subsection (3), we will first look at how consumers make their choices when purchasing goods or services. AI already provides ample opportunities to intervene in the business-consumer communication channel in different ways, some of which have turned the traditional eco-system of offering and buying branded items upside down. This overview will be helpful to understand what kind of AI tools may impact the way purchasing decisions are made and how. Particular attention will be paid to chatbots, assisted product search, voice assistants and recommender systems.

In Section II, we identify the criteria that define the notion of the average consumer as established by EU trademark jurisprudence. Our focus will be on assessment parameters whose application is likely debatable when purchasing decisions are made through AI-assisted tools.

Section III, will reflect on the interplay between the notion of the average consumer and the functioning of certain AI tools as addressed in Section I. In particular we will demonstrate that specific AI tools may challenge the application of this notion.

3. From a human-driven purchase to a data-driven purchase

The way consumers choose and purchase goods and services has changed significantly since the end of the 19th century.[17] It would, however, be shortsighted to simply state that we have moved from 'a traditional purchase model' to 'an AI-assisted model' since then. As we will discuss hereafter, the reality is more complex.

a) Human-assisted purchases

In short, until the 20th-century consumers went to (mostly) local shops where they would ask for a generic product (coffee, milk or the likes) that would then typically be chosen by sellers out of a relatively limited amount of supply. Although sellers would sometimes make suggestions to choose between alternative brands and influence purchasing decisions, consumers were the ones who ultimately decided to buy a particular item.[18] Similarly, consumers went to local service providers for generic services, e. g., local hairdressers or beauticians, sometimes relying on a human recommendation to choose a particular service provider.

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[16] *T. Dreier,* Thumbnails als Zitate? – Zur Reichweite von § 51 UrhG in der Informationsgesellschaft, FS Krämer 2009, 225 (own translation from German).

[17] Yet we still rely on the international framework that was outlined in Paris Convention as adopted in 1883 already.

[18] *Curtis and Platts,* AI is coming (Fn. 9) 9.