

JYH-AN LEE / RETO M. HILTY / KUNG-CHUNG LIU (eds.):

Artificial Intelligence and Intellectual Property

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Artificial intelligence (AI) is one of the most researched emerging technologies, which is understandable given the multidimensional nature of this topic. Its imminent economic relevance and the enormous pace of development in this field make speedy and thorough answers to many challenges – including legal ones – essential. Even more importantly, AI – unlike many other emerging technologies – is clearly capable of triggering a paradigm shift in all aspects of society, including the legal system. Personality, liability and the protectability of AI and its outputs are just the tip of the iceberg. Indeed, none of these issues seem solely theoretical anymore. Most recently, the protectability of AI outputs (something that can have the most immediate economic consequences) was in the forefront of case law in multiple jurisdictions. In the last two years, for example, we have seen court rulings and other decisions (issued mainly by intellectual property offices) related to the protectability of news reports. These included cases related to Tencent’s Dreamwriter algorithm,¹ artworks generated by an AI software called RAGHAV,² and as to whether AI can be registered as the sole patentee of an invention.³ It is clearly evident that all aspects of intellectual property law that are data-driven are affected to an ever greater extent by the age of algorithms.

It is therefore a great pleasure for this reviewer to hail the present concise book, produced as the fruit of the collaboration of the Applied Research Centre for Intellectual Assets and the Law in Asia, the School of Law at Singapore Management University, the Chinese University of Hong Kong (Faculty of Law) and the Max Planck Institute for Innovation and Competition. Edited by Jyh-An Lee, Reto M. Hilty and Kung-Chung Liu, the book includes contributions from an extensive list of researchers who have done excellent work on the overlaps between AI and IP.

¹ Decision of the People’s Court of Nanshan (District of Shenzhen), 24 December 2019, Case No (2019) Yue 0305 Min Chu No 14010, [2020] GRUR International 763 (note) – *Tencent Dreamwriter*.

² Péter Mezei and Anushka Tanwar, ‘Artificial Authorship under Indian Copyright Law?’ (*Copy21*, 13 August 2021) <<http://copy21.com/2021/08/artificial-authorship-under-indian-copyright-law/>> accessed 8 October 2021.

³ The answer is no in the United States (see *Stephen Thaler v Andrew Hirshfeld* District Court for the Eastern District of Virginia, 1:20-cv-903, 2 September 2021), and the United Kingdom (see *Thaler v Comptroller General of Patents Trade Marks And Designs* [2021] EWCA Civ 1374, 21 September 2021); but yes in Australia (see *Thaler v Commissioner of Patents* [2021] FCA 879), and in the Republic of South Africa (see Meshandren Naidoo, ‘In a world first, South Africa grants patent to an artificial intelligence system’ (*The Conversation*, 5 August 2021) <<https://theconversation.com/in-a-world-first-south-africa-grants-patent-to-an-artificial-intelligence-system-165623>> accessed 8 October 2021).

The book offers a holistic approach which is particularly focused on – but not limited to – the European and Asian perspectives on the selected issues. Following the editors’ introductory remarks, Part I is dedicated to the fundamentals of AI and IP. This is followed by Parts II and III, which are dedicated to specific copyright and patent law issues respectively. Part IV addresses the importance of AI for IP administration. Part V – as a spin-off to Part III on copyright law – includes two further chapters on the overlaps of AI and software protection. Part VI is dedicated to the protection of and access to data. Finally, the last part looks at AI and IP from a broader perspective, namely, from the view of competition law and legal personhood. We should take a closer look at each of these topics and the included chapters.

Part I, in line with its title (‘Technology, Business, and Basics of AI’) is comprised of three chapters. The first one, authored by Anthony Man-Cho So, provides an in-depth analysis of the three key types of machine learning (supervised, unsupervised and reinforcement learning), and the core elements of such processes (including preparation of training data, formulation of learning task and implementation of algorithmic solutions for supervised learning; clustering and generative modelling for unsupervised learning; and agent-based learning in case of reinforcement learning). Next, the presence and business relevance of AI in the healthcare system is introduced by Ivan Khoo Yi and Andrew Fang Hao Sen. The chapter pays close attention to the policy considerations of healthcare service providers, patients, pharmaceutical manufacturers, insurance companies, employers and policymakers. It also looks at the short, medium and long-term challenges and risks of AI for the healthcare system. In the third chapter, Reto M. Hilty, Jörg Hoffmann and Stefan Scheurer have contributed one of the most comprehensive discussions of the traditional IP theories in the AI arena. Understandably, they argue that the deontological justifications have a decreasing – although non-disappearing – role in the field of AI and IP. Conversely, the utilitarian justifications (various concepts included within the two main categories of incentive theories and theories related to the optimization of patterns of productivity) might appear more attractive to serve as the basis of any kind of IP protection for AI outputs. The authors nevertheless – at least in the humble view of this reviewer – correctly conclude that ‘most AI applications lack a theoretical justification for creating exclusive rights’.⁴

⁴ Jyh-An Lee, Reto M Hilty and Kung-Chung Liu, *Artificial Intelligence and Intellectual Property* (Oxford University Press 2021) 71.

Part II addresses the patent law aspects of AI. Raphael Zingg's chapter guides us through AI and patentability requirements, as well as the practical aspects of patenting of AI, including triadic patents (i.e. corresponding patents filed at the European Patent Office, the United States Patent and Trademark Office and the Japan Patent Office for the same invention, by the same applicant or inventor). Ichiro Nakayama, partially as a follow-up to the previous chapter, presents the Japanese perspective on patentability of AI-related inventions, as well as the most recent approach of the Japan Patent Office on this matter. The chapter also discusses the relevance and practicalities of the use of AI by the 'person having ordinary skill in the art' (PHOSITA). Finally, Feroz Ali has brilliantly combines two distinct emerging technologies that certainly have overlaps: blockchain and AI. Ali's discussion of how these technologies can and do practically affect patent prosecution perfectly represents the opinion of this reviewer, according to which thinking on the possibilities of paradigm-shift is inevitable.

Part III, like the previous Part, brings together contributions related to AI and copyright. The first of these is an updated reprint of Andres Guadamuz's famous 'Do Androids Dream of Electric Copyright?' article, originally published in 2017. In this chapter, Guadamuz argues that the UK's – nevertheless quite old – rule on computer-generated works⁵ should be the way forward in the protectability of AI-generated outputs. Jyh-An Lee continues this discussion and addresses the classic copyright prerequisites of protection (originality, authorship) through the lens of the Copyright, Designs and Patents Act – not forgetting, however, to mention the unresolved open questions of justifications and certain doctrinal fallacies of AI authorship. Tianxiang He questions whether copyright law is flexible enough to allow data training and mining activities with the risk of cooling the booming AI industry. His contribution takes a Chinese perspective (and to a certain degree, a broader East Asian one), but its findings – and its proposal for a semi-open exception for the use of AI for data analysis – are equally relevant for other jurisdictions too. Finally, Benjamin Sobel recommends the readers to look beyond the mere copyright aspects of machine learning and maintains that the major arguments are misplaced. Machine learning occasionally needs non-protected data, and some uses are outside copyright law in general. Hence, Sobel argues, copyright should be reshaped on an international level to support developments in the AI industry.

Part IV is dedicated to the IP administration perspectives of AI. First, Jianchen Liu and Ming Liu introduce the Chinese experience on the substantive and procedural/examination aspects of patent examination of AI-related inventions. The chapter is of crucial importance firstly due to AI's extreme relevance to China, and secondly because it will be of great interest to those following the ongoing global registration marathon of DABUS. Anke Moerland and Conrado Freitas look at AI from the trademark registration perspective and introduce the findings of empirical research on the possible use of algorithms in the assessment of trademarks (but not the connected decision-making regarding the registration

itself), especially related to image recognition, identifying conceptual similarity, descriptiveness, morality and classification. The chapter also introduces the existing limitations of AI tools in trademark assessment, e.g. the search for unregistered prior rights, the accuracy of data, as well as the inability to use the mainly doctrinal tests of trademark law related to protectability and registration. Finally, Daniel Seng discusses the use of AI in the enforcement of IP rights related to the detection of counterfeits and automated takedowns by internet portals, and the possible negative externalities of such solutions, for example, a lack of transparency and the limits of the existing technologies. Seng finishes with a modest proposal for reform which includes putting the focus on indirect liability of intermediaries and setting up some kind of insurance scheme.

Part V, returning to the software-related aspects of AI, includes two chapters. First, Hao-Yun Chen envisages a 'copyright 2.0' protection for 'software 2.0', programs written by algorithms, questioning how 'copyright/software 1.0' justifications and rules on subject matter and authorship can be applied for AI-generated contents. He concludes that there is no convincing need to introduce an additional layer of copyright protection for emergent works. Peter R. Slowinski, like Chen, follows a step-by-step analysis to examine whether the existing IP regime can effectively cover AI-generated outputs. He concludes that IP laws are only relevant at an abstract level, as specific cases – stemming mainly from the patent field, and primarily from the USA – confirm that patent protection is practically excluded for these contents.

Part VI addresses one of the most important elements in the AI industry: 'data'. Kung-Chung Liu and Shufeng Zheng cover general questions related to the protection of data specifically generated for AI and big data, as well as access to data specifically generated for AI and copyright-protected data. The article takes the view that access is more crucial for the AI industry than protection, and that a fair dealing clause would be feasible and appropriate to manage the concerns related to AI's access to data. Matthias Leistner's contribution encompasses the full spectrum of European Union legal sources related to 'data', ranging from copyright protection under the Software and Database Directives through the *sui generis* protection under the Database Directive to the recently introduced text and data mining exception of the Copyright in the Digital Single Market Directive. Leistner points out that three relevant groups of rights might be present in the *acquis communautaire* regarding the use of data in the AI ecosystem: minimum rights of the lawful users of connected devices; the right of access guaranteed to competitors and businesses; and the exclusion of databases generated by public bodies from the scope of *sui generis* protection, which allows for a 'free use' of a certain body of public domain data.

Part VII closes the book perfectly, positioning AI and IP as a part of a bigger picture. Anselm Kamperman Sanders discusses trust, competition and the European Union's IP policy on AI. He argues that the Fourth Industrial Revolution necessitates that competition authorities take a lead in overseeing the smooth access to the data necessary for the development of AI for the benefit of the whole society. Finally, Eliza Mik's contribution is on one of the most challenging questions that has

⁵ s 9(3) of the Copyright, Designs and Patents Act (CDPA).

significant overlapping effects. The legal personhood of AI has an impact on almost all fields of law, including IP, where the centrality of the anthropocentric author/inventor is the starting point of all discussions. Mik's final formulation of the problem is not only an excellent quote to finish this review, but also a position statement that this reviewer fully agrees with:

[i]t must be always remembered that the granting of legal personhood has never been premised on the existence of autonomy, creativity, consciousness, or

intelligence. Consequently, even an exponential increase in any of those attributes that would "spawn" a superior computer intelligence capable of creating breathtaking art or groundbreaking inventions would remain legally irrelevant. AIs are tools which are no different from hammers.⁶

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