Exposé des Dissertationsvorhabens

mit dem vorläufigen Arbeitstitel:

„Automated decision-making – an exploration from the GDPR to Human Dignity”

vorgelegt von

Mag. iur. Thomas Peter Por

angestrebter akademischer Grad

Doktor der Rechtswissenschaften (Dr. iur.)

betreut von

Univ.-Prof. Mag. Dr. Nikolaus Forgó

Studienkennzahl lt. Studienblatt: A 783 101

Dissertationsgebiet lt. Studienblatt: Rechtswissenschaften

Wien, November 2023

Table of contents

1 Setting the stage: Distrust and the automation of decision-making

Progressively intensifying since the turn of the century the umbrella term of Artificial Intelligence (AI) has been looming over our society like the sword of Damocles, constituting an ever-present danger.[1] Human imagination preceded the development of the first AI applications and pop-cultural depictions of machine supremacy have gained significant popularity over time.[2] The genre of science fiction has led the creation of allegories that have strongly shaped society's perception of the technology to this day. One may argue, that the polarities of a machine utopia and the more prominent scenarios of machine dystopias, in which AI is portrayed as a malevolent antagonist to the human race, are reflected in the legislative pursuits to balance benefits and risks. The existential fear of a point of no return in which technological growth becomes uncontrollable and irreversible is currently discussed under the notion of "technological singularity".[3] This potential reality raises relevant questions for engineers, futurologists, sociologists and policymakers alike, and while they are not necessarily linked to the currently realisable possibilities and corresponding threats to the fundamental rights of individuals and society at large, they already find reflection in and inform the existing legal frameworks.[4]

With regards to the near-time risks of AI, the current debates centre around technologies that utilise the ever-increasing availability of vast amounts of data (Big Data[5]) and the flaws and harmful byproducts of a phenomenon which is described as algorithmically

[1] Exemplary is the rapid improvement of language and image recognition capabilities of AI systems since the 2000s as described in Max Roser, 'The Brief History of Artificial Intelligence: The World Has Changed Fast – What Might Be Next?' [2023] Our World in Data <https://ourworldindata.org/brief-history-of-ai> accessed 20 November 2023; Esther Addley, '"AI" Named Most Notable Word of 2023 by Collins Dictionary' *The Guardian* (1 November 2023) <https://www.theguardian.com/technology/2023/nov/01/ai-named-most-notable-word-of-2023-by-collins-dictionary> accessed 20 November 2023; 'Artificial Intelligence: A Damocles Sword?' (*ISACA*) <https://www.isaca.org/resources/news-and-trends/isaca-now-blog/2019/artificial-intelligence-a-damocles-sword> accessed 20 November 2023.

[2] Exemplary are the movies *Matrix, Terminator, 2001:A Space Odyssey* and comparable popcultural works of the 20th centruy; but even older works depict the anthropocenic fear of men losing control of its creation such as *Frankenstein.*

[3] See Ray Kurzweil, 'The Singularity Is Near' in Ronald L Sandler (ed), *Ethics and Emerging Technologies* (Palgrave Macmillan UK 2014) <https://doi.org/10.1057/9781137349088_26> accessed 19 November 2023; Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies* (Oxford University Press 2016); Ray Kurzweil, *The Singularity Is Near: When Humans Transcend Biology* (Viking 2005).

[4] This research aims to outline the sceptical sentiment that has culminated in the manifestation of a prohibition of ADM in the European legal sphere.

[5] See for example Marcelo Corrales, Mark Fenwick and Nikolaus Forgó (eds), *New Technology, Big Data and the Law* (Springer Singapore 2017) <https://link.springer.com/10.1007/978-981-10-5038-1> accessed 13 February 2023; Kevin Culver, 'The Rise of "Big Data"' (*Medium*, 18 November 2021) <https://medium.com/@culver.coffee/where-exactly-did-big-data-come-from-728748f4bbd0> accessed 20 February 2023.

powered automated decision-making (ADM).[6] Increasing capabilities and usage of data-driven AI technologies have already and continue to lead to the transmission or sharing of decision-making competence between humans and complex software systems. The notion of algorithmic decision-making encompasses various degrees of machine influence in a wide variety of decision-making processes, public and private, ranging from mere decision support to fully autonomous systems. Increasingly, these algorithmic decision systems have a profound impact on our lives and the infrastructure that surrounds us by impacting decisions vital to our welfare and freedom.[7] This includes high-stakes decisions in areas such as justice, administration, finance, housing, education, and employment, but also includes decisions that are seemingly more benign in nature, yet not harmless in their consequences, such as the curation, creation, and mediation of online content.[8] This content is consumed by billions and thereby impacts subliminally yet profoundly our channels of communication and our shared perception of reality. The potential risks posed by the use of such technologies in sensitive areas of life have increasingly come to the fore in recent years and have become the subject of noticeable public debate.[9] Apparent flaws and known risks of ADM systems include various forms of bias[10], discrimination and opaque decision-making[11] as well as the potential misuse of the technology as potent surveillance technologies, social scoring systems or intrusive social engineering tools.[12] To counter the multitude of risks these systems entail, the European legislator's response - *de lege lata* – has been, amongst others, a substantive body of secondary legislation, most

[6] See exemplary Tal Zarsky, 'The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making' (2016) 41 Science, Technology, & Human Values 118; Stine Lomborg, Anne Kaun and Sne Hansen, 'Automated Decision-making: Toward a People-centred Approach' [2023] Sociology Compass.

[7] For a publicly prominent depiction of AI flaws see Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (1st edition, Crown 2016).

[8] Recently, a multitude of US States have filed a lawsuit against Meta in which they argue that Meta has over the last decade "profoundly altered the psychological and social realities of a generation of young Americans" Cecilia Kang and Natasha Singer, 'Meta Accused by States of Using Features to Lure Children to Instagram and Facebook' *The New York Times* (24 October 2023) <https://www.nytimes.com/2023/10/24/technology/states-lawsuit-children-instagram-facebook.html> accessed 20 November 2023.

[9] Most prominent examples include the Chinese social credit system, risk predictions for criminals and employee monitoring systems as well as the usage of software that supports decision-making for the allocation of social security benefits.

[10] For an empirical account on the inherent tendency of bias in AI systems see Aylin Caliskan, Joanna J Bryson and Arvind Narayanan, 'Semantics Derived Automatically from Language Corpora Contain Human-like Biases' (2017) 356 Science 183.

[11] See most prominently Frank Pasquale, *The Black Box Society* (2015).

[12] See Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (1st edition, PublicAffairs 2019).

prominently the General Data Protection Regulation (GDPR).[13] The GDPR most importantly includes a prohibition of ADM, which will be the primary focus of this research.[14] *De lege ferrenda*, the European Commission has proposed the globally first comprehensive legal framework laying down harmonised rules on artificial intelligence: the Artificial Intelligence Act (AIA).[15] The rapid development of the technology and its corresponding legal framework require a thorough analysis, of the details, but also the fundamental values that permeate or should permeate their development.

2 Dogmatic literature and research focus

As briefly mentioned, recourse against the above-mentioned risks is often sought in data protection legislation. In the legal sphere, these questions have been discussed most specifically in association with Article 22 of the legislation, which manifests the prohibition of ADM and for the aims of this research shall be called the *lex contra machinas* hereinafter. The legal provision provides for a prohibition, subject to substantial exemptions, of automated processing of personal data without human involvement that results in decisions that have significant effects on individuals. It is the successor of an in essence comparable norm, Article 15 of its predecessor legislation, the Data Protection Directive 1995.[16] Article 15 has earned the verdict of a second-class data protection right that is "*rarely enforced, poorly understood and easily circumvented*"[17] in the history books of legal dogmatics, not last, because of its complexity and numerous ambiguities. Hopes for an increased utility and application of the prohibition have resurged with its transposition into the GDPR and the newly proposed AIA have intensified debates. A recent study on ADM research confirmed, that there has been a steep increase in scientific - especially legal - literature.[18] The re-emerging interest in the literature is explained by the coming into force of the GDPR and can be substantially attributed to dogmatic questions

[13] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L119/1.
[14] See Article 22 of the GDPR.
[15] *European Commission*, Proposal for a regulation laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) COM/2021/206/final https://eurlex. europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0206.
[16] Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31995L0046&from=EN.
[17] Isak Mendoza and Lee A Bygrave, 'The Right Not to Be Subject to Automated Decisions Based on Profiling' (8 May 2017) <https://papers.ssrn.com/abstract=2964855> accessed 9 January 2023.
[18] Lomborg, Kaun and Hansen (n 6).

produced by Article 22. Additionally, with the AI-Act on the horizon[19] general questions regarding the relationship between AI and the law have been of highest interest. There is extensive legal literature focussed on the scope and contents of Article 22, discussing its level of protection and its operationalisation that make it one of the most scrutinized legal provisions of the text.[20] There is no research gap to be identified in the literature that would necessitate an additional determination of the norm's normative quality and scope. Therefore, this research undertaking focuses in parts on the status quo of the doctrinal research itself and builds upon, relates and complements it with avenues for further development of the dogmatic analysis. The shortcoming or insufficiency of the research lies at the foundational conceptualisation of the provision as outlined below.

While the dogmatic debate surrounding the interpretation of the prohibition of ADM-systems is remarkably extensive and rich, consensus on fundamental aspects of the provision is not yet found in the legal literature and continues to cause friction in different interpretative approaches. Most prominent are the reemerging discussions on whether Article 22 constitutes a prohibition or a right[21] or whether a right for explanation can be derived from the legal text.[22] The extensive amount of literature produced on the detailed interpretation of Article 22 has a variety of causes. Primarily, as has been duly observed in the literature, this is due to the fact, that the provision is a semantic maze of ambiguities and has a confusing cascade of exemptions and different layers of safeguards. By its very wording and structure, it produces a multitude of difficult legal questions that are

[19] The legislative progress can be followed here 'Procedure 2021/0106/COD' <https://eur-lex.europa.eu/legal-content/EN/HIS/?uri=celex%3A52021PC0206> accessed 15 November 2023.
[20] For an selection of the most prominent pieces around Article 22 see Lee A Bygrave, 'Automated Profiling' (2001) 17 Computer Law & Security Review 17; Sandra Wachter, Brent Mittelstadt and Luciano Floridi, 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' (28 December 2016) <https://papers.ssrn.com/abstract=2903469> accessed 26 April 2023; Sandra Wachter and Brent Mittelstadt, 'A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI' (LawArXiv 2018) preprint <https://osf.io/mu2kf> accessed 12 January 2023; Michael Veale and Lilian Edwards, 'Clarity, Surprises, and Further Questions in the Article 29 Working Party Draft Guidance on Automated Decision-Making and Profiling' (2018) 34 Computer Law & Security Review 398.
[21] The latter minority opinion is held by Tosoni and Thouvenin et al, see Luca Tosoni, 'The Right to Object to Automated Individual Decisions: Resolving the Ambiguity of Article 22(1) of the General Data Protection Regulation' (2021) 11 International Data Privacy Law 145; Florent Thouvenin, Alfred Fruh and Simon Henseler, 'Article 22 GDPR on Automated Individual Decision-Making: Prohibition or Data Subject Right?' (2022) 8 European Data Protection Law Review (EDPL) 183.
[22] Firstly mentioned by Goodman and Flaxman, the majority opinion has centered around an understanding that such a right would not be deductable, most prominently argued by Wachter et al, see Bryce Goodman and Seth Flaxman, 'European Union Regulations on Algorithmic Decision Making and a "Right to Explanation"' (2017) 38 AI Magazine 50; Wachter, Mittelstadt and Floridi (n 20).

additionally complexified with the need to account for the ever-changing technical realities.[23] Additionally, the rich dogmatic analysis is further fragmented by the demands that are placed upon Article 22. As the single specific regulation against algorithmic decisions, it is assigned with the expectation of being the panacea against the multitude of risks associated with AI. Fuelled by public expectations for effective protection and most notably the guidelines adopted by the EDPB[24], attempts for interpretation that stretch the utmost possible sense of the wording are being forced upon the norm. Some authors suggest that the guidelines "*leans at times nearer to unauthorised law-making than mere interpretation*".[25] For the sake of providing a high level of protection, Article 22 is being squeezed like a lemon during a flu epidemic. This is the line of critical commentators that have also argued that the grand hopes for an effective layer of protection should not lead to an overextension of the provisions meaning thereby trumping a thorough interpretation of the text.[26] This research suggests that the locus of the discussion remains in part with the assessment of the rationale of the norm. It has been argued that the intention of the prohibition has not been sufficiently defined to justify a loose interpretation that is favoured by the dogmatic doctrine.[27] The immense dogmatic interest and dissatisfaction is in parts also caused by this friction. These fundamental questions about the *ratio legis* of the norm have been raised, yet not sufficiently answered. Interpretations that aim to create the highest possible level of protection often invoke or implicitly apply a strong teleological interpretation and refer to the fundamental intention of the norm. There seems to be a wide consensus among scholars that the regulation was originally shaped by "dehumanisation fears" and "autonomy concerns" and that Article 22 establishes the protection of human dignity, integrity and autonomy.[28] This view is also broadly shared beyond legal dogmatics by important public bodies. Most prominently, the independent data protection

[23] Some commentators have argued for a radical rewriting of the norm, see 'Radical Rewriting of Article 22 GDPR on Machine Decisions in the AI Era' (*European Law Blog*, 13 October 2021) <https://europeanlawblog.eu/2021/10/13/radical-rewriting-of-article-22-gdpr-on-machine-decisions-in-the-ai-era/> accessed 25 April 2023.

[24] Article 29 Working Party, 'Guidelines on Automated Individual Decision-Making and Profiling for the Purposes of Regulation 2016/679 (as Last Revised and Adopted on 6 February 2018)' <https://edpb.europa.eu/our-work-tools/our-documents/guidelines/automated-decision-making-and-profiling_en> accessed 20 November 2023.

[25] Veale and Edwards (n 20) 404.

[26] On the forefront of this line of reasoning is Thouvenin et al, see Thouvenin, Fruh and Henseler (n 21).

[27] ibid.

[28] See Zarsky (n 6); Guido Noto La Diega, 'Against the Dehumanisation of Decision-Making – Algorithmic Decisions at the Crossroads of Intellectual Property, Data Protection, and Freedom of Information' (2018) 9 JIPITEC <https://www.jipitec.eu/issues/jipitec-9-1-2018/4677>; Claus D Müller-Hengstenberg and Stefan Kirn, 'Intelligente (Software-)Agenten: Eine neue Herausforderung unseres Rechtssystems Rechtliche Konsequenzen der "Verselbstständigung" technischer Systeme'.

authorities in Germany, for example, proclaim in their resolution on artificial intelligence: *„KI darf Menschen nicht zum Objekt machen.“*.[29] This is required by human dignity and is guaranteed by the Basic Law and the Charter of Fundamental Rights of the European Union. Reference is made on the one hand to the dignity principle of Article 1(1) of the Basic Law, which has been detailed by the Federal Constitutional Court in constant case law with Kant's "object formula".[30] According to this, the human being may not be made a mere object of the state (or of private individuals) or be subjected to treatment that in principle calls into question his or her status as a legal subject. In the same vein, specific reference is made to Article 22 of the General Data Protection Regulation, which grants the individual the right not to become the object of certain fully automated decisions. Comparably, the French data protection authority CNIL explores the question *“How Can Humans Keep the Upper Hand?”*.[31] The direct connection from the protection of human dignity to the prohibition of ADM is often invoked and utilised as an argument. However, scholars are not getting tired of arguing, that a historical perspective on the legal materials is only fruitful to a limited extent in providing a solid reasoning for these line of reasoning.[32] More precisely, it is argued that the extent to which the object formula serves as the basic rationale is not as clear as widely accepted and even if were, it would hardly help in favouring one or the other interpretation.[33] An unequivocal understanding of the rationale of the norm is contested and further scientific debate on this matter promises to help to clarify how far a certain understanding of the norm’s *telos* would justify a grammatically loose interpretation. To put the prohibition on a solid fundament, that can aspire to achieve a certain timelessness, a more profound engagement with these preliminary questions may be required. This research will therefore focus on the avenues for a fundamental understanding of the norm's rationale and explores the possibility of a stronger re-anchoring of the prohibition in the fundamental ethical and political values from which they derive their normative force (Human Dignity and Autonomy).[34] Stronger focus and

[29] Unabhängigen and Datenschutzaufsichtsbehörden des Bundes und der Länder, ‘Hambacher Erklärung Zur Künstlichen Intelligenz’ (2019) 3.

[30] As part of Kants deontological ethics, see Immanuel Kant, *Grundlegung zur Metaphysik der Sitten: Hrsg. u. eingef. v. Theodor Valentiner* (Nachdr edition, Reclam, Philipp, jun GmbH, Verlag 1986).

[31] Commission Nationale de l’Informatique et des Libertés CNIL, ‘How Can Humans Keep the Upper Hand? Report on the Ethical Matters Raised by Algorithms and Artificial Intelligence’ (2017) <https://www.cnil.fr/en/how-can-humans-keep-upper-hand-report-ethical-matters-raised-algorithms-and-artificial-intelligence> accessed 24 February 2023.

[32] *Thouvenin/Früh*, Automatisierte Entscheidungen: Grundfragen aus der Perspektive des Privatrechts, SZW/RSDA 1/2020, 9.

[33] Thouvenin, Fruh and Henseler (n 21) 194.

[34] See Antoinette Rouvroy and Yves Poullet, ‘The Right to Informational Self-Determination and the Value of Self-Development: Reassessing the Importance of Privacy for Democracy’, *Reinventing Data Protection*

clarity should be paid on the rationale and inherent anxiety the provision entails that are deeply rooted in an anthropocentric worldview.

This research focus is further justified by the upcoming landmark AI Regulation of the European Union, which necessitates a re-evaluation of Article 22. Inevitably this legislative paradigm shift will trigger existential question for Article 22 of the GDPR and requires corresponding assessment in the scholarly sphere. Whether Article 22 is doomed to share its predecessor's fate or whether the provision will finally come to live as a cornerstone in the protection of individuals is an ongoing and intensifying debate.[35] Some scholars argue for a shift to understand Article 22 more as a procedural right that would better fit with the governance regime of the AIA and is better located in the accountability culture of the GDPR - recalling the importance of DPIAs in that context.[36] Others argue that to interpret the norm in light of the AIA means, to "reduce" the prohibition to an individual right.[37] Others voiced concerns, that the long-term utility of the norm may be undermined by the return to "first principles" such as fairness and proportionality assessments.[38] Without prejudicing the legislative process, with the coming into being of the AIA, Article 22 will be complemented with a broad arsenal of protective mechanisms. While this will relieve the provision from its position as the primary protector of fundamental rights threats stemming from AI, the consequences for its relevance are difficult to predict without a newly framed understanding of the provision. This shift will certainly lead to a diversification of expectations and may ultimately prove to be an opportunity for the provision's redefinition of utility.

3 Research objectives

In its entirety, the planned dissertation aims to provide a holistic analysis of the foundational basis of the prohibition of ADM as manifested in Article 22 of European data

(Springer 2009) 47; Luciano Floridi, 'On Human Dignity and a Foundation for the Right to Privacy' (26 April 2016) <https://papers.ssrn.com/abstract=3839298> accessed 28 April 2023.

[35] See Guillermo Lazcoz and Paul de Hert, 'Humans in the GDPR and AIA Governance of Automated and Algorithmic Systems. Essential Pre-Requisites against Abdicating Responsibilities' (2023) 50 Computer Law & Security Review 105833.

[36] ibid.

[37] Thouvenin, Fruh and Henseler (n 21).

[38] Lee A Bygrave, 'Machine Learning, Cognitive Sovereignty and Data Protection Rights with Respect to Automated Decisions' (*The Cambridge Handbook of Information Technology, Life Sciences and Human Rights*, May 2022) <https://www.cambridge.org/core/books/cambridge-handbook-of-information-technology-life-sciences-and-human-rights/machine-learning-cognitive-sovereignty-and-data-protection-rights-with-respect-to-automated-decisions/A1D153F5D7D4461EAF5B3B965E4B9612> accessed 25 April 2023.

protection legislation. Special focus shall be paid to its connection to the constitution values of dignity and self-determination, in light of the new paradigm of AI regulation and the existing literature. Necessarily, this research aims to achieve a better contextualisation of the *lex contra machinas* by adopting a philosophical, historical and legal-dogmatic perspective that is informed by the complex empirical and socio-technical reality of the technology. Triggered by the nomenclature of the broader policy debates, the research will adopt the lens of distrust to establish a meta-mapping of the risks and corresponding scepticism towards machine intelligence in a deliberately broad sense to enable a profound understanding of the environment and its expectations in which Article 22 exists. While such a contextualisation already constitutes an end in itself, it is also a precondition for the achievement of the primary research objectives as follows. Starting from the ambiguities in the interpretation of Article 22, this research aims to present the foundational basis of the provision in an original manner by conducting a thorough analysis of its genesis, rationale and telos. Firstly, this is aimed to be achieved by an exploration of the historical development and creation myths that surround the coming into force of the provision. Secondly, this will be achieved by outlining and describing its link to the German conceptualisation of self-determination, and more precisely human dignity, from a normative and theoretical perspective. This analysis aims to provide clarity regarding the validity of prevalent attempts at a strong teleological interpretation. Based on this analysis this research aims to complement the current literature around Article 22 by evaluating the teleological lens for a sound interpretation. The existing literature and elements of the provision itself will be scrutinized in this light. Finally, this research aims to provide an assessment of the potential future and positioning of the *lex contra machinas* in the newly emerging framework of regulating AI. Two different trajectories for the provision's relevance should be established. The first is an understanding of the norm, analogously modelled along the reasoning to the famous *Solange* doctrine of the German BVerfG[39], as a provision that serves its prohibitive purpose only "as long as" the envisioned level of protection, in this case the effective mitigation of machine risks, is not achieved. Secondly, a trajectory that perpetuates the prohibition as a steadfast principle against machine decision-making, that coherently complements the AIA and derives its normative force from fundamental constitutional values will be explored.

[39] Peter Hilpold, 'So Long Solange? The PSPP Judgment of the German Constitutional Court and the Conflict between the German and the European "Popular Spirit"' (2021) 23 Cambridge Yearbook of European Legal Studies 159.

4 Research questions

The concrete research questions are initiated by the overarching proposition, that the scholarly complexities stem in parts from insufficient clarity and contestable validity of the fundamental intention and the *ratio legis* of the norm. Further, based on the identified gap in the literature and the above-mentioned research objectives the following research questions are defined as guiding lights for this dissertation.

- To what extent can we conceptualise Article 22 as a *lex contra machinas* based on the legislative history, intention and rationale of the provision and in how far is the provision a deep-rooted manifestation of distrust towards machine decision-making?
- Can we deduct theoretical and normative justifications from the German and Kantian conceptualisation of dignity and autonomy - the core of self-determination - that merit the manifested absolute prohibition of machine decision-making?
- What effect do the results of the previous questions have on a teleological understanding and interpretation of Article 22 and how does it complement the current scholarly debate?
- How can we re-evaluate and what are the trajectories for Article 22 in the shifted paradigm of the emerging AI-regulation? Are the safeguards of the AIA likely to replace the necessity for a *lex contra machinas* and will it be rendered superfluous, or will it finally come to full fruition backed by a strong teleological understanding?

5 Research methodology

This doctoral thesis will adhere to the methods of analytical jurisprudence and seeks to provide a general account of the relevant legislation and especially its literature, through the tools of conceptual analysis. The holistic nature of the research endeavour requires the adoption of perspectives, that go beyond mere legal-technical considerations for a sound interpretation of the law. This doctoral thesis will therefore contextualise the legal provision in its empirical, historical and theoretical frame. A comprehensive literature review has been carried out, utilising the relevant specialised libraries and legal databases, including both national and international literature. The research gap, objectives and questions are defined based on a broader understanding of the relevant inter-disciplinary

literature. The applicable and emerging legislation will be systematically and conceptually analysed using the canon of legal methodology, in adherence to the broader principles of hermeneutical interpretation and critical reasoning. This research will be mindful of the fact, that the literature in the field of automated decision-making has a strong interdisciplinary focus, necessitated by the complex socio-technical realities of the issue. While this research aims to draw from and be informed by knowledge of a variety of disciplines, the primary tools of analysis remain the methods of legal-policy and legal-dogmatic research. This context defines the necessity to practice a special awareness regarding the various research disciplines and their methodological differences and will be observed throughout the research endeavour.

6 Preliminary dissertation structure

7 Research timeline

Winter semester 2020	• Completion of the admission procedure to the doctoral programme

	• Topic finding phase
Summer semester 2021	• VO on jurisprudential methodology according to the curriculum • SE and public presentation of the intended dissertation project • Literature research and preparation of the exposé
Winter semester 2021	• Research and writing phase
Summer semester 2021	• Research and writing phase • SE according to the curriculum
Winter semester 2022	• Research and writing phase
Summer semester 2023	• Research and writing phase • SE according to the curriculum
Winter semester 2023	• Research and writing phase • Final SE according to the curriculum • Submission of the first draft
Summer semester 2024	• Revision and completion of the final version • Submission and defensio of the dissertation

8 Indicative bibliography

Barredo Arrieta A and others, 'Explainable Artificial Intelligence (XAI): Concepts, Taxonomies, Opportunities and Challenges toward Responsible AI' (2020) 58 Information Fusion 82.

Brkan M, ‘Do Algorithms Rule the World? Algorithmic Decision-Making and Data Protection in the Framework of the GDPR and Beyond’ (2019) 27 International Journal of Law and Information Technology 91.

Bygrave LA, ‘Automated Profiling’ (2001) 17 Computer Law & Security Review 17.

Bygrave LA, ‘Machine Learning, Cognitive Sovereignty and Data Protection Rights with Respect to Automated Decisions’ (*The Cambridge Handbook of Information Technology, Life Sciences and Human Rights*, May 2022) <https://www.cambridge.org/core/books/cambridge-handbook-of-information-technology-life-sciences-and-human-rights/machine-learning-cognitive-sovereignty-and-data-protection-rights-with-respect-to-automated-decisions/A1D153F5D7D4461EAF5B3B965E4B9612> accessed 25 April 2023.

Corrales M, Fenwick M and Forgó N (eds), *New Technology, Big Data and the Law* (Springer Singapore 2017) <https://link.springer.com/10.1007/978-981-10-5038-1> accessed 13 February 2023.

Edwards L and Veale M, ‘Slave to the Algorithm? Why a “right to an Explanation” Is Probably Not the Remedy You Are Looking For’ (LawArXiv 2017) preprint <https://osf.io/97upg> accessed 9 January 2023.

Floridi L, ‘On Human Dignity as a Foundation for the Right to Privacy’ (2016) 29 Philosophy & Technology 307.

Hoofnagle CJ, van der Sloot B and Borgesius FZ, ‘The European Union General Data Protection Regulation: What It Is and What It Means’ (2019) 28 Information & Communications Technology Law 65.

Kim TW and Routledge BR, ‘Why a Right to an Explanation of Algorithmic Decision-Making Should Exist: A Trust-Based Approach’ (2022) 32 Business Ethics Quarterly 75.

Lazcoz G and de Hert P, ‘Humans in the GDPR and AIA Governance of Automated and Algorithmic Systems. Essential Pre-Requisites against Abdicating Responsibilities’ (2023) 50 Computer Law & Security Review 105833.

Lomborg S, Kaun A and Hansen S, ‘Automated Decision-making: Toward a People-centred Approach’ [2023] Sociology Compass.

Martini M, *Blackbox Algorithmus – Grundfragen einer Regulierung Künstlicher Intelligenz* (Springer Berlin Heidelberg 2019) <http://link.springer.com/10.1007/978-3-662-59010-2> accessed 12 January 2023.

Mendoza I and Bygrave LA, 'The Right Not to Be Subject to Automated Decisions Based on Profiling' in Tatiana-Eleni Synodinou and others (eds), *EU Internet Law* (Springer International Publishing 2017) <http://link.springer.com/10.1007/978-3-319-64955-9_4> accessed 10 January 2023.

Moerel L and Storm marijn, 'Automated Decisions Based on Profiling: Information, Explanation or Justification – That Is the Question!' in Nikita Aggerwal and others (eds), *Autonomous systems and the law* (Verlag CH Beck 2019).

'Radical Rewriting of Article 22 GDPR on Machine Decisions in the AI Era' (*European Law Blog*, 13 October 2021) <https://europeanlawblog.eu/2021/10/13/radical-rewriting-of-article-22-gdpr-on-machine-decisions-in-the-ai-era/> accessed 25 April 2023.

Rouvroy A, '"Of Data and Men". Fundamental Rights and Freedoms in a World of Big Data.' (2016) <https://www.semanticscholar.org/paper/%22Of-Data-and-Men%22.-Fundamental-Rights-and-Freedoms-Rouvroy/13830dd9e5e6d78603e06965ef69932bd2e82e6c> accessed 20 February 2023

Rouvroy A and Poullet Y, 'The Right to Informational Self-Determination and the Value of Self-Development: Reassessing the Importance of Privacy for Democracy', *Reinventing Data Protection* (Springer 2009).

Rubinstein IS, 'Big Data: The End of Privacy or a New Beginning?' (2013) 3 International Data Privacy Law 74.

Solove DJ, 'Privacy and Power: Computer Databases and Metaphors for Information Privacy' (14 December 2000) <https://papers.ssrn.com/abstract=248300> accessed 2 May 2023.

Thouvenin F, Fruh A and Henseler S, 'Article 22 GDPR on Automated Individual Decision-Making: Prohibition or Data Subject Right?' (2022) 8 European Data Protection Law Review (EDPL) 183.

Tosoni L, ‘The Right to Object to Automated Individual Decisions: Resolving the Ambiguity of Article 22(1) of the General Data Protection Regulation’ (2021) 11 International Data Privacy Law 145.

Veale M and Edwards L, ‘Clarity, Surprises, and Further Questions in the Article 29 Working Party Draft Guidance on Automated Decision-Making and Profiling’ (2018) 34 Computer Law & Security Review 398.

Wachter S and Mittelstadt B, ‘A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI’ (2019) 2019 Columbia Business Law Review 494.

Wachter S, Mittelstadt B and Floridi L, ‘Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation’ (28 December 2016) <https://papers.ssrn.com/abstract=2903469> accessed 27 April 2023.

Wachter S, Mittelstadt B and Russell C, ‘Counterfactual Explanations without Opening the Black Box: Automated Decisions and the GDPR’ (2017) 31 Harvard Journal of Law & Technology (Harvard JOLT) 841.

Wagner B, ‘Liable, but Not in Control? Ensuring Meaningful Human Agency in Automated Decision-Making Systems’ (2019) 11 Policy & Internet 104.

Zarsky T, ‘Incompatible: The GDPR in the Age of Big Data’ (2017) 47 Seton Hall Law Review 995.