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Review of the doctoral dissertation of Maciej Trocia, M.Sc. entitled Data-centric approach to automated legal problem solving

1 General remarks

As the author notes already in the introduction of his doctoral dissertation, the use of data processing has become a fundamentally important activity for companies, states and individuals in the 21st century. This follows major advances in computer science and computer networks, and the use of computational methods. These can be successfully applied to solve complex socio-technical problems. The same is true of law. Initially, in the 1950s-60s of the previous century, the doctrine of legal theory used the term legal informatics, i.e. the use of IT techniques for certain legal processes, including in the application of the law. Nowadays, the term LegalTech is already used, i.e. the use of modern information technologies for the conclusion and execution of contracts (e.g. smart contracts, execution of contracts by means of Blockchain technology, use of cryptocurrencies as a means of performance hitherto relying on payment in money, access to large knowledge bases e.g. case law, legal literature and finally the use of artificial intelligence algorithms in the law-making process and, more importantly, in the adjudication process, makes the topic outlined in the dissertation very topical.

Therefore, it should be assessed that the doctoral dissertation presented for evaluation is up-to-date, has not been, in this respect, analyzed in the Polish legal doctrine and constitutes an important voice that will fill the gap existing in this respect.

It should also be noted that the author has aptly stated that there is an interaction between networked information and communication technologies and law. Some authors believe that networked information and communication technologies are technologies of freedom, capable of helping human civilisations solve all our most pressing problems - if only the law, which cannot move at the speed of human thought, would stop undermining the potential of the technology and either pursue the agenda or get out of the way. There is also the view that information technology negatively affects the realisation of the principles of law, through unbreakable encryption and untraceable alternative currencies (cryptocurrencies) that are dangerous to society, or

that irresponsible and fundamentally lacking in the humanitarian element, artificial intelligence algorithms.

2.Specific comments

While the author persistently notes that current proposals to use automated computing in the context of law are indeed far-reaching and can be considered revolutionary, the idea of bridging the gap between mathematics and law is not new and dates back to at least the 17th century. First of all, early attempts to formalize the theory of legalism were made by Leibniz. In the Elementa Juris Naturalis, Leibniz attempted to do for law what Euclid had done for mathematics. Leibniz was probably inspired by his teacher Erhard Weigel, who dreamt of applying the Euclidean method to all fields of knowledge. Instead of finding a universal pattern of reasoning based on mathematics (computation) that would also be relevant to law, there was a feeling among lawyers and philosophers in the 17th century that certain legal forms of reasoning were specific to generalities. This sense became apparent with the separation of jurisprudence and philosophy that was then taking place. However, as the author aptly points out, the rise of legal positivism and the introduction of the formal legal method (formaldogmatische Methode) in the nineteenth century established the view that the elaboration of law and its content could not be reduced to the formal logic used in other fields of intellectual activity - law must have its own logic, methodology and philosophy. However, the author aptly observes that the opposite trend is now occurring. Firstly, a cognitive approach to legal reasoning is gaining significant importance, i.e. that legal reasoning can be seen as an application of a broader human competence, which is called practical cognition or practical reasoning, including the ability to process information in order to derive appropriate determinations. In this view, legalistic reasoning is nothing more than an enhancement of our everyday practical thinking. There is also a view that legalistic thinking involves the simultaneous use and cooperation of three cognitive mechanisms - intuition, imagination and thinking in language.

The author notes that there is also another approach, which tends to treat legal reasoning as part of reasoning, takes a neuroscientific approach to law ('neurolaw'), that is, an attempt to find a link between law and the brain by taking into account the findings of neuroscience. The aim of neurolegal research is typical of neuroscience and is an attempt to identify objective patterns to explain the workings of the human brain in the context of legal problem solving.

Rather than referring to the individual's cognitive mechanisms or neuroscientific data about the individual, it refers to data external to the individual, gathered from the individual's many interactions with the external world. This approach stems from a wider social phenomenon known as datafication - the attempt to capture any element of reality into a unified form so that it can be collated and analyzed.

From this perspective, datafication is also, understood as a way of accessing and monitoring people's behavior, essentially becoming an accepted new paradigm for understanding social behavior. This process, coupled with the free market economy, leads to the emergence of a "surveillance capitalism" in which "human experience becomes the raw material from which the behavioral data used to influence and even predict our actions is created." It is also critically argued that implicit in the very notion of data are the concepts of selection and transformation, as data does not exist naturally. Datafication has been the subject of criticism both in the theory and philosophy of legalism and in the practice of legalism. This critique is taken up, inter alia, in the context of privacy, as data processing has a significant impact on these issues.

The author's views also deserve approval in that, with the widespread adoption of datafication in various areas of human activity, there is currently a debate about the impact of automation on law. As part of the datafication phenomenon, the data-centric approach to the automation of law is becoming an issue from a normative point of view, especially in light of its adoption in the courts, as well as legislative responses to it.

The author also notes that datafication and the development of new technologies are also having an impact on the judicial process as the volume of filings and the complexity of certain types of litigation increase. As a result, the classical view of the role of the judge is being challenged, and one of the proposed responses is to assign the case to a specific judge and allow him or her to 'manage' the case in close cooperation with the summoned parties. Here it can be supplemented that even in Polish law, information and information technology is used in the adjudication process. Examples include electronic writ-of-payment proceedings, electronic proceedings before the National Court Register, the National Register of Debtors, etc. These technologies, at present, only serve to assist the judge in making a judgment. It is not yet legally possible to replace the judge with an algorithm.

The author also aptly notes that although datafication is a relatively recent phenomenon, it is linked to the development of new technologies, in particular artificial

intelligence. While there is no single universally accepted definition of artificial intelligence, this technological and social phenomenon can be defined as electronic agents that perceive perceptions from the environment and perform actions, or as 'an activity dedicated to making machines intelligent, and intelligence is that functionality that enables a subject to function appropriately and predictively in its environment'. However, these definitions do not give us much information about the boundary between an intelligent and a non-intelligent agent

Interesting views are expressed by the author in describing the concept of datafication. It is related to the notion of an 'onlife' or 'hybrid world', a life that is complex and formed by combinations of software and hardware that determine the flow of information and the ability to perceive and learn about the environment, which is guided by an ICI capable of anticipatory processing based on its use in the digital unconscious of the Big Data space." The Big Data Space is, in tum terms, "a heterogeneous, distributed temporal space in which exponential amounts of data are stored and processed, while access to the data is distributed and accuracy is dependent on a number of mostly invisible factors; as such, the Big Data Space represents the digital unawareness of the onlife world."

The author also notes, and this view should be shared, that the majority of empirical research papers that constate 'artificial' or 'machine' intelligence do not refer to intelligence itself, but to emanations of intelligent machine behavior. This subtle distinction is inspired by the proposal to test a machine's ability to exhibit intelligent behavior based on the 'imitation game', which has replaced the philosophical dilemma of whether a machine is capable of 'thinking'. The "imitation game" replaces the original question "Can machines think?" with the question "What happens if a machine assumes the role of A in this game?". It is assumed that if the machine is in no way unmasked by humans after asking as many questions as desired, the machine is considered to be 'intelligent' . This test has become known as the Turing test and has been widely adopted by AI researchers because it allows one to skip the philosophical subtleties about the nature of intelligence while focusing on the emanations of intelligent behavior. In EU law, however, work is already underway on the legal framework of tort liability for AI, just as an act setting out a legal framework for the operation of AI is being prepared.

Artificial intelligence is similarly defined as "the study of cognitive processes using the conceptual framework and tools of computer science". It is also commonly thought

that "when engineers automate an activity that, when performed by a human, responds with cognitive activity, this is commonly referred to as an application of AI." It is also noted that such a definition is not fully descriptive of all AI activities, as there are AI activities that humans cannot perform, such as spotting credit card fraud among billions of transactions. The existence of such tasks is one of the reasons why some scholars argue that data combined with new AI techniques will transform the world, including in the context of law. In the political-legal context, this has traditionally been categorised as 'futurist liberalism' and, more recently, as postmodernism.

Futurist visions of the transformation of law resulting from data processing should be distinguished from empirical research aimed at solving problems of law through computational power. It should be pointed out, both strands of research are related to technological advances, it is the latter, however, that focus on the creation of actually working computer software designed to solve selected legal problems, while the former are rather loosely related to the actual capabilities of AI models.

In contrast, the empirical research that is carried out within the Artificial Intelligence and Law (AI and Law) research community, which to a large extent should be considered part of quantitative law research. AI and Law is considered a subfield of both Computer Science and Law, as it uses methods from both fields to improve our understanding and modelling of legal reasoning (legal computer science).

The above highlights the strong connection between the computational research carried out by AI and Law researchers and legal theory. In this sense, AI and Law aims to improve our understanding and modelling of legal reasoning. However, there is a more straightforward goal of AI and Law research, which is "to develop computational models of legal reasoning that can create legal arguments and use them to predict outcomes in legal disputes."

Although AI (and AI and Law as a part of it) is a predominantly empirically oriented field, researchers in this field, like futuristically oriented philosophers, tend to use 'wishful mnemonics' that do not fully correspond to the actual capabilities of AI models. The author points out that a good example of such is a project called 'General Problem Solver', which intended to describe a program that served as a universal problem solver. Similarly, an important paper in the field of AI and Law was entitled 'An Artificial Intelligence Approach to Legal Reasoning' which suggested that there was an alternative method of performing AI-based legal reasoning, when in fact the paper

proposed a computational framework for combining rule-based reasoning with case-based reasoning in the narrow context of contract formation by offer and acceptance. The wishful thinking mnemonic leads to a framework assumption of constantly being on the verge of sweeping transformational change that would render existing methods and findings obsolete. And it should even be noted that as early as the 1970s it was noted that 'as we progress, this malaise deepens. A good example of the vision is the concept of legal singularity, in which the law is somehow (magically) transformed into a system in which legal uncertainty does not exist.

Computational models developed by AI & Law researchers will perform legal reasoning. The newly extracted Argument Related Information will link computational models of legal reasoning (CMLRs) and argument directly to legal texts. The models can generalize arguments for and against specific outcomes in problems introduced as texts, predict the outcome of the problem and explain their predictions using arguments that legalists recognize and can evaluate for themselves. The result will be a new kind of legal application, one that enables cognitive computing, a kind of collaboration between humans and computers in which everyone performs the kinds of intelligent actions they can do best.

The author believes that there is a prevailing belief, or even expectation, of a breakthrough in the scope of AI research. He observes that programs that use past case decisions as a knowledge base to analyze other cases are not AI programs, but are based on a judgement database. This observation was based on the distinction between AI programes and other behaviorally oriented programes: the programes are focused on predicting judicial decisions, or morally generally on analyzing judicial behavior, from a database in which rules of legality play no role. In doing so, the PhD student points out that traditional modes of reasoning are being replaced by mathematical methods - for example, Boolean algebra or regression analysis. Although the concept of artificial intelligence is not explicitly defined in this thesis, given the current research in AI, it seems that the use of regression analysis based on processing data drawn from decisions in past cases is an important area of AI and Law.

The above remarks are necessary to show that the concepts used in the field of AI and Law research are very specific and, as such, must be analyzed and interpreted taking into account the underlying computational models. The author has rightly emphasized that this is relevant in the context of this dissertation, as the wishful mnemonic also

relates to the notion of a data-centric approach to automated legal problem solving, which is rooted in the field of AI and Law research. This notion is also 'wishful thinking' in the sense that there is no universal data-centric approach to legal problem solving. It should be noted, therefore, that the 'wishful' nature of the notion of a data-centric approach to automated legal problem solving is to some extent due to the fact that the understanding of the concept of legal problem solving differs in important respects in the research of Lega and AI. AI's perspective on the notion draws on cognitive psychology, where it was noted that although problems that arise in different spheres of life are significantly different in nature, all situations that we classify as problems share a common core. This core has been defined as follows: "A problem arises when a living being has a goal, but does not know how this goal is to be achieved. Whenever it is not possible to move from a given situation to a desired situation simply by acting, then it is necessary to resort to thinking."

This definition of the problem was proposed in relatively general terms within the Gestalt psychology movement, a school of thought that focused on the human mind and behavior as a whole. Representatives of Gestalt psychology opposed both materialism and spiritualism and focused on determining 'which parts of nature belong as parts to functional wholes' and discovering 'their position in these wholes, the degree of their relative independence, and the articulation of larger wholes of works, or, as the author states, Gestalt psychology rejected structuralism and claims that the whole is greater than the sum of its parts. For this reason, the problems analysed by Gestalt psychologists tended to be relatively complex and their observations were expressed in general, qualitative terms.

The Gestalt definition of a problem using the aforementioned concepts characteristic of the AI community, consists of the same two components: an initial state ('given situation') and a goal state ('desired situation'). Thus, the AI researchers extended this definition by adding the notion of the still operator, which is the key element that connects the initial state to the target state.

The author concluded that, based on these definitions, the nature of the problem as understood by both Gestalt psychologists and AI researchers is highly subjective, as what is a problem for one person may not be a problem for another. The work of Gestalt psychology clearly states that if someone can achieve a desired state by merely performing a set of obvious operations, then the problem does not exist. AI's

researchers suggested the same and focused their research on problems that were well-structured and difficult, yet solvable for the individual.

The author also addressed the issue of legality and found that this subjective and elusive nature of the problem of legality is one of the factors leading to the fact that the concept of legality problem solving is much less frequently used and analyzed in legality theory and philosophy than the concept of legality reasoning. The notion of legality problem solving appears mainly in educational contexts. In contrast, legal reasoning has been studied by legalists for centuries. It is regarded as one branch of practical reasoning, "which is the application by man of his reason to decide how to act in situations of choice." The author considered that it has been rightly noted that whether legalists think, reason and argue differently from ordinary people is a suggestion, not an axiom, but it is believed that certain reasoning techniques are characteristic of legalist decision-making." This thesis, through the notion of legal problem solving, refers precisely to these techniques and not to some particular philosophical conception of legal reasoning. Such an approach is consistent with the approach generally taken in AI and Law, where attempts are made to create "Computer programs containing complex technics of legal reasoning", i.e. computational models of legal reasoning that consist of a knowledge representation and an inference mechanism.

The use of the term legal problem solving instead of legal reasoning is also motivated by the fact that in unusual circumstances where “a party brings or threatens a lawsuit even when it knows the law is against it, just to tire the opponent of delay or costs" legal reasoning is not helpful, but at the same time this is a situation where a legal problem that can be attempted to be solved by AI and Law methods certainly exists. The scope of the concept of legal problem solving can therefore be interpreted as being somewhat broader than the concept of legal reasoning and therefore more appropriate in the context of AI and Law.

The approach to the method of legalism can be broadly divided into three fundamentally different views. The first position questions the very existence of the method of legalism, and thus the scientific nature of jurisprudence, from the perspective of the intuitionist version of American Realism and Critical Legal Studies. According to the second, position, 'jurisprudence has some of the characteristics of a "true science", but only on the assumption that it draws on the methods of other scientific disciplines such as mathematics, logic, physics, biology and, in some cases,

linguistics, sociology or economics. Jurisprudence thus enjoys the status of a science, but only at the cost of losing its methodological identity and autonomy." This position includes representatives of the analytical philosophy of law, as well as American and Scandinavian legal realism, the free law school, Petrażyckian thought, systems theory, the economic school of law, argumentation theory and legal hermeneutics. The third position assumes that 'jurisprudence enjoys, at least to some extent, methodological autonomy and develops its own 'internal' criteria of what constitutes a science' and is represented by Roman jurisprudence, the German historical school and legal positivism.

Notwithstanding the above terminological considerations, depending on the philosophical stance adopted towards the legalisation method, the considerations presented in this dissertation regarding the data-centric approach to automated legal problem solving can refer to different aspects of legalisation reasoning. However, an analysis of the precise scope of this applicability is beyond the scope of this dissertation.

The approach to legal reasoning depends on the legal tradition in question, although due to the co-inergence of legal systems resulting from the globalisation of law, corporate transnational regulation and the growing importance of international law, these differences are becoming increasingly smaller. And so the author concludes that the intersection of AI and legal reasoning is complex and difficult to represent computationally, but at the same time it is a relatively well-studied area. The main limitations of using AI to solve real world problems that have not yet been overcome are identified. These limitations also largely apply to the automatic solution of legality problems.

The political-legal studies course focuses on the recognition and evaluation of "the doctrinal-axiological content that underlies our culture of legality and is essential for the correct analysis and interpretation of positive law." The object of study is not always a great philosophical system, but also a political-legal doctrine, i.e. "a theory based on abstract thinking rather than on real experience (...) relating to the essence of the state meaning the tasks of state organs."

In light of the above definitions and the scope of the politico-legal doctrine, it is submitted that the data-centric approach to automated legal problem solving can be considered such a doctrine, as it touches upon the core issues of state activity in the form of judicial decision-making. Since this doctrine, like practically every politico-legal

doctrine, is rooted in the previous politico-legal and philosophical concepts that have been briefly outlined in the preceding passages, it seems practically impossible within the framework of a single academic paper to make a comprehensive assessment of this doctrine in the light of all its possible connections with previous politico-legal thought. This view must be shared.

The author, therefore, concentrated in his dissertation, on the analysis and critical evaluation of the data-centric approach to automatic problem solving from a selected perspective, i.e. frontal, neoliberal and managerial. Such a choice is justified by the socio-economic context of the adoption of various new technologies in the contemporary world, which is also relevant in the context of the data-centric approach to automated legal problem solving. Datafication, along with propertyzation and platfomisation, is part of a new socio-economic paradigm - the information economy, which is strongly linked to neoliberalism and managerialism.

The author rightly recognizes that this new type of economy is 'oriented fundamentally towards the production, accumulation and processing of information', understood as a process that shifts control of the workflow from workers to managers in such a way that 'each activity in production has its several parallel activities at the center of management: each must be devised, pre-calculated, tested, arranged, allocated and ordered, checked, controlled and recorded throughout and after its completion. In elect, the production process is reproduced on paper before, during and after its completion in physical form." As to the purposes for which such a transfer of control takes place, it is pointed out in the Marxist spirit that labour is visualised in this context "not as a total effort, but abstracting from all its concrete situations in order to conceive of it as universal and infinitely repetitive movements, the sum of which, when related to the other things that capital . And this is why the concepts of the information economy and the process of informalization are strongly linked to informationalism, a technological paradigm that replaces and subordinates the previous paradigm of industrialism and, as such, leads to the emergence of a new post-industrial economic order: information capitalism. Consequently, the terms information economy, information capitalism and informationism can to a large extent be used interchangeably. In the social context, other terms are used, most notably the terms information society and society 3.0.

It is noted that informationalism is "linked to the expansion and rejuvenation of capitalism, just as industrialism was linked to its constitution as a fashion of production." Due to its important technological component, other formulations are

proposed, such as the "fourth industrial revolution". Furthermore, various varieties of information capitalism are highlighted in academia. One noteworthy example is bioinformatics capitalism, which combines new biology with informatics, leading to the emergence of new organs of computational forms and self-replicating memory.

As far as the legal and institutional level is concerned, the transformation in the spirit of information capitalism is taking place at two complementary and mutually reinforcing levels: at the level of the basic understanding of legal entitlements and lack of legal entitlements, and at the level of the structure and operation of regulatory and governing institutions. Given the focus of this dissertation's analysis, attention will be focused on the latter level, particularly in relation to patterns of change in lawyers' dispute resolution processes. It is argued that these patterns of change represent a 'shift towards neoliberal managerialism'. Such a socio-political phenomenon has implications for the delimitation of the law, including in the context of fundamental politico-legal values and ideas, such as dignity or freedom of expression.

The author indicated that the research objective of the dissertation is to combine the data-centric approach to automated legal problem solving derived from AI and Law, and the distinct empirical and theoretical-legal research field, with political-legal patterns of change in legal processes when it comes to legal problem solving, especially in the context of adjudication.

The author rightly points out that the argument for this thesis is that the data-centric approach to automated legal problem solving remains linked to neoliberal managerialism. In this sense, this thesis makes a novel contribution to political-legal studies, as the phenomenon of the data-centric approach to automated legal problem solving has not yet been comprehensively studied in its political-legal dimension in relation to neoliberal managerialism.

The author used the analytical method, i.e. methods of analysis and criticism of the literature, which involves demonstrating the relevance, originality and novelty of the problem identified and addressed'. This method is well recognized in legal science and is appropriate for this research thesis, as the emergence of the data-centric approach is seen as a transjurisdictional phenomenon affecting different legal systems. The author used an analytical method based on a three-step procedure proposed in science, consisting of reconstruction, systematisation and evaluation. Reconstruction is conducted primarily using a historical-descriptive perspective to identify key sources and develop a narrative exposition. Systematisation is carried out by interpreting the

reconstructed doctrine as an active element of political-legal reality, and finally, evaluation is carried out by critically examining the reconstructed and systematised doctrine.

3.Structure of the dissertation

The dissertation consists of four chapters. The first chapter, 'The concept and pioneering work in data-centric approach', aims to explore the conceptual foundations of the data-centric approach to automated problem solving and argues that the emergence of the data-centric approach was not the result of a single revolutionary technological change. To this end, the origins of the data-centric approach were analyzed by the author from the early 1950s onwards. He showed from his research that, at a conceptual level, the data-centric approach to automated legal problem solving is not significantly different from the approaches adopted in earlier studies in quantitative law.

In chapter two, 'The emerging of AI and Law and modern use case of data-centric approach', the author assessed the current use cases of the data-centric approach in the context of the paradigm shift in quantitative research that took place in the 1970s, when jurisprudential research was largely replaced by AI and Law research. The author rightly concludes that there are two main areas of AI and Law research in which the data-centric approach is applied: prediction of judicial decisions and legal analytics. He also pointed out that the aforementioned paradigm shift has fundamentally changed the approach to computational legal research, and that contemporary use cases of the data-centric approach are deeply rooted in early research that began in the 1950s. It is therefore argued that the data-centric approach is not a new phenomenon.

The third chapter entitled Data -centric approach in the context of the origins of neoliberalism contains the author's analysis of the relationship between the origins of the data-centric approach and neoliberalism. The author focuses primarily on the period before 1973, when there was a terminological shift regarding neoliberalism as a response to Pinochet's coup in Chile. Prior to 1973, neoliberalism was predominantly used in a positive, self-identifying sense by numerous free market advocates. It is argued that, in its early days, neoliberalism was not generally associated with any formalist ideas in the spirit of AI and Law and, consequently, it is not reasonable to argue that the data-centric approach can be somehow related to the neoliberal thought presented by leading neoliberals such as Hayek.

Chapter four, entitled Data-centric approach as an element of contemporaneous neoliberal managerialism, examines the convergence of neoliberalism and managerialism towards a unified understanding denoting the mainly negative phenomena associated with the rise of modern, information capitalism. The main argument of this chapter is that the data-centric approach to automated legal problem solving is strongly aligned with neoliberal managerialism in its understanding after the above-mentioned convergence as it advances the following fundamental elements of neoliberal managerialism: active intervention, prioritising competition, and the necessity of elite leadership. A selection of existing applications of the data-centric approach is critically evaluated to show that the presence of the above-mentioned features of neoliberal managerialism is necessary for real existing implementations of data-centric methods of automatic legal problem solving.

In this way, the main argument of the thesis that the data-centric approach to automated legal problem solving is strongly aligned with neoliberal managerialism is developed and evaluated. The presented construction of the dissertation correctly allows the research objective of the work to be realized. The author initially analyses issues related to the data-centric approach in the context of its use in the concept of neoliberalism, information-based capitalism. Chapters one and two are devoted to assessing the conceptual aspects of this phenomenon, as well as its historical roots and contemporary state-of-the-art projects. In the first chapter, the author pointed out that although the data-centric approach is considered to be novel (the Big Data phenomenon in the business intelligence industry), at a conceptual level it has its roots in early quantitative law research. It was shown that the data-centric approach is based on performing legal problem solving using knowledge induced automatically from collections of legal documents or other relevant datasets using statistical analysis techniques (machine learning).

The author also evaluated projects dedicated to, for example, predicting judicial decisions and showed that the path from the simple calculations proposed in the 1950s to the use of early machine learning methods in the 1970s was mainly technical and did not involve major conceptual shifts. In particular, early systems for predicting judicial decisions were evaluated. The primary aim of these projects was to demonstrate that it was possible to identify factual elements of past cases that influence future decisions in a particular domain and to derive numerical values of these elements using a formula to predict other decisions in a particular domain. These

projects make many assumptions that are characteristic of American social engineering, such as that the court will follow a pattern it has established and that the relevant key factors will be present (non-controversial) in future cases. Because such assumptions are counterfactual to how the law works, the accuracy and relevance of the proposed models has been questioned. In terms of differences in degree, four main differences between early and contemporary research can be identified using the example of predictive sentencing: (1) exponentially more cases are used nowadays compared to early projects; (2) no specific domain of prediction is chosen, whereas early projects were almost always dedicated to a specific legality problem; (3) feature engineering is now mainly focused on formal aspects, such as duration of proceedings, names of parties, name of court, rather than on legally relevant aspects (4) projects are still mainly concerned with outcome identification or outcome-based judgment categorisation. In the third chapter, the author established the relationship of the data-centric approach to neo-liberalism understood in a positive, self-identifying sense by many proponents of the free market. In this respect, it has been argued that in its early days neoliberalism was not associated with any formalist ideas of AI and Law, and consequently it is not reasonable to argue that the data-centric approach can be somehow related to the neoliberal thought presented by leading neoliberals such as F.A. von Hayek.

Finally, in chapter four, the author explored the convergence of neoliberalism and managerialism towards a unified understanding denoting the mainly negative phenomena associated with the rise of modern (information) capitalism.

4 Formal observations

In terms of form, the dissertation does not raise any objections. The subject matter of the dissertation is universal in scope, so naturally the author had to rely on foreign literature. Therefore, the author makes use of numerous foreign and Polish literature on various areas of law, including the law of political and legal doctrines, the law of modern technologies, information technology, etc. The ways of quoting and using the views of other authors are not objectionable.

5 Final conclusions

In my opinion, the doctoral dissertation entitled "The dissertation written by MA Maciej Trocia constitutes an independent scientific work, with an original topic, previously not

the subject of scientific research, and thus constitutes the basis for further steps in the procedure for granting the degree of Doctor of Social Sciences, specialisation in law under the Act of 20 July 2018. - Law on Higher Education and Science and forms the basis for further steps in the doctoral procedure. This dissertation was dedicated to the evaluation of a data-centric approach to automated legal problem solving. The main argument of this dissertation was that the data-centric approach is strongly associated with neoliberal managerialism.

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