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Digital Technology, Internet Research and Benefits of a Virtual Library

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Abstract

The search of legal precedence or *stare decisis* has always distinguished the lawyer who is in professional practice. The development of the internet has led to a greater dimension in this research and to an empirical approach to understanding the application of law. The academic lawyer has always needed access to the newest legislation and case law and the online search engines are of increasing relevance to accessing the virtual library. This is necessary to assimilate because of the impact of law and technology which is not just of relevance to find texts but also the process of artificial intelligence that is of utility in forms of inquiry. It includes portals that can be sourced online, Lexis and Westlaw which have available software packages that are available for lawyers. The issue is if the technology is moving at excessive speed or is the momentum of digital technology sustainable within the profession. This article argues that legal software provides the means for artificial intelligence in an increasingly specialist field and it is necessary for professionals to stay equipped with knowledge updates on computer terminals in order to enhance their research or lose out in the information supply chain.

Introduction

The search for legal information on the internet involves the understanding of legal rules and precedence that assume the quality of a knowledge. This is defined by the methodology of research into legal concepts and is the dominant influence in scholarship and legal research design.[2] The same principle can be applied in reading the texts on the internet and assimilating the information by using digital technology in the interpretation of rules accessed from online search engines. It is necessary to understand the technology that is the driving force behind this availability of legal information on the internet and the access it provides to a virtual in-house library.

The discipline of law brings together lawyers, judges, and jurists who have the requirement to search for legal precedence on the internet. The basis for legal research is established as the traditional genre of the legal profession in the field of enquiry because the legal rules are constantly changing, revised, and updated. There are three kinds of research which are carried out by applying a distinction between "law as a practical discipline," "law as humanities," and "law as social sciences" as a conceptual framework.[3] It is also known as theory-testing or knowledge building exercise in the legal academia, and it deals with studying existing laws, related cases, and authoritative materials on some specific matter.[4] The division between research in the legal environment can be defined as based on the doctrinal and non-doctrinal approaches.

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[2] Desmond Manderson and Richard Mohr, 'From Oxymoron to Intersection: An Epidemiology of Legal Research' (2002) 6 (1) Law Text Culture 159, 161. For a breakdown of empirical and doctrinal PhDs in Australia see Desmond Manderson, 'Law: The Search for Community' in Simon Marginson (ed), Investing in Social Capital (University of Queensland Press, 2002) 152.

[3] Mathias M. Siems and Dalthi Mac Sithigh, Mapping Legal Research, Cambridge Law Journal, Vol 71, Issue 3, (2012) 651-676 https://www.cambridge.org/core/journals/cambridge-law-journal/article/mapping-legal-research/EA0828E0AEDBD803D928D138B8CD48C1.

[4] Ibid.

This is a distinction between the theoretical and analytical aspects of law and those of the legal practitioner which are governed by the requirement of their industry and the sector. The research for precedence comprises an in-depth analysis of the legal doctrine with its development process and legal reasoning. The non-doctrinal research also considers various social facts, relationship of law with those facts, impact of law on society.[5] Given that it has gained wide acceptance from all quarters for legal professionals, namely the lawyers, the judges, and legal scholars the doctrinal legal research has remained the prominent research method in law.[6]

The perspective of some jurists is that "legal science" is a "sui generis" discipline that can be distinguished from the methods used in other academic research.[7] The methodology of internet research begins with establishing a working definition of digital rights as a foundational framework in an environment where regulation is in a development stage.[8] The internet is being used to establish collective brands and networks, such as Lawyer Online, websites with legal information and advice which is now proliferating and consumer authorities, trade associations, trade unions, legal expenses insurers, and law firms are among the providers.[9]

This indicates the resource on the internet for case law through the websites, subscription platforms, and blogs which are the basis for information.[10] There is access for lawyers on the Westlaw and Lexis websites and CD Roms that facilitate information for researchers who want to access data that will facilitate the preparation of litigation.[11] In the US a Federal Civil Code is buttressed by each State have adopted codification of their own criminal and civil law that provides a greater need for accessing law on the internet because of the multi-lateral legal provisions. The methodology of research provides a roadmap on the literature available on the domestic law from district court to Supreme Court decisions and federal law on the internet.[12]

The internet has greatly influenced the process of collecting legal sources in research and its application in the profession has meant that there is a growing amount of storage required for indexing different files and digital databases. The choice that the researcher makes may persuasively influence their need to be met with a knowledge of source-usage that will serve the purpose of input for professional applications that aid the legal sector.[13]

This article considers the virtual law library and the legal research methods in the environment of digital technology. There is an examination of the process of academic inquiry that distinguishes the methodology from the practitioner research to establish the basis of legal rules. It establishes the concept for an empirical environment brought about by the technology available to identify the variables and the interpretation of legal language to arrive at the correct analysis. The focus is on the academic lawyers access to the available information when optimizing research on the web and evaluates the software that is the driving force for online legal services. The information highway is an invisible asset for the law researcher and the tools it provides can be utilized for the professionals in a virtual library.

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[5] Amrit Kharel, Doctrinal Legal Research (February 26, 2018). Available at SSRN: https://ssrn.com/abstract=3130525 or http://dx.doi.org/10.2139/ssrn.3130525

[6] Ibid.

[7] See, e.g., Jan M. Smits, *The Mind and Method of the Legal Academic* (Cheltenham: Edward Elgar, 2012), 9 (suggesting that this should research what "the law should be"); Jan M. Smits, "Law and Interdisciplinarity: On the Inevitable Normativity of Legal Studies", 1 Critical Analysis of Law 75 (2014) ("question of what the law ought to be").

[8] "Although the internet is subject to a variety of laws and regulation including copyright law, defamation law, the data protection framework, and the criminal law, a large volume of activity occurs online which would not normally be tolerated offline. Regulating in a Digital World, House of Lords, Select Committee, 2nd Report of Sessions, 2017–19, HL Paper 299, (2019) p 8 https://publications.parliament.uk/pa/ld201719/ldselect/ldcomuni/299/299.pdf

[9] Legal Needs, Legal Capability and the Role of Public Legal Education A Report by Law for Life: the Foundation for Public Legal Education Lisa Wintersteiger (2015), 8 https://research.thelegaleducationfoundation.org/research-learning/funded-research/legal-needs-legal-capability-and-the-role-of-public-legal-education

[10] Free Case law resources on line, Info law, September 2015. https://www.infolaw.co.uk/newsletter/2015/09/free-case-law-resources-online/

[11] Sonja Larsen and John Bourdeau, *Legal Research for Beginners* (New York: Barron's, 1997). 173–180.

[12] Judy A. Long, *Legal Research Using the Internet* (Albany, NY: West Legal Studies, 2000). 97–99.

[13] P.G. Korrel & O.W.M. Kamstra, *Sociaal wetenschappelijke & juridische methodologie*. Amsterdam: Melkman 1991 p. 18; R.A. Posner, *The problems of Jurisprudence*, Harvard: Harvard University Press 1993 p. 70; M. Salter & J. Mason, *Writing Law Dissertations*. Harlow: Pearson Educated 2007 p. 6. J. Smits, *The Mind and Method of the Legal Academic*, Cheltenham: Edward Elgar Publishing 2012. p. 37.

DISTINGUISHING DOCTRINAL AND PROFESSIONAL RESEARCH

The legal research at its optimum involves rigorous analysis and creative analogy with the motivation for deriving general principles from a collective mass of primary materials.[14] The term 'doctrinal' is based on precedent and legal rules that assume the quality of being part of a framework that are meant to apply consistently and evolve organically.[15] This formulation includes a legal framework and it has been defined as "a synthesis of rules, principles, norms, interpretive guidelines and values. It explains, makes coherent or justifies a segment of the law as part of a larger system of law".[16]

This is also the method of research on the internet where information is stored that provides legal scholars with the ability to download information on their research project.[17] The same principle can be applied in law in reading the text on the internet and the impact of digital technology for the application of the information that is relied on by the professors who teach within the legal subjects. The doctrinal framework of legal data is based on an understanding of the rules of precedent between the court jurisdictions, rules of statutory interpretation, the discipline and knowledge such as the separate civil and criminal jurisdictions, and various tests of liability, along with the acknowledged reasoning methods, borrowed from philosophy and logic, such as induction and deduction.[18] This is based on an analytical approach that requires studying existing laws, related cases, and authoritative materials on some specific legal area. With its jurisprudential bases on positivism, doctrinal legal research is 'research in law' rather than 'research about law'.[19] It can be distinguished from literature review, content analysis or historical legal research, based on secondary data of authorities such as conventional legal theories, laws, statutory materials, and court decisions.[20]

Paul Chynoweth states that doctrinal legal research is concerned with the formulation of legal "doctrines" through the analysis of legal rules. The presence of legal doctrines clarify ambiguities within rules, place them in a logical and coherent structure and describe their relationship to other rules. The decisions as to which rules apply in a particular situation is made easier by the existence of legal doctrines (for example, the doctrine of consideration within the law of contract). The notion that : "Within the common law jurisdictions legal rules are to be found within statutes and cases (the sources of law) but it is important to appreciate that they cannot, in themselves, provide a complete statement of the law in any given situation. This can only be ascertained by applying the relevant legal rules to the particular facts of the situation under consideration."[21]

In this framework the methodological basis of legal research has traditionally not been appropriately explained by academics and this has led to misunderstandings between researchers in interdisciplinary fields.[22] There needs to be a distinction between the methodologies employed by legal scholars in research from scientific research and define it as a normative process which is undertaken within the humanities research tradition. The approaches adopted by researchers is explained primarily in terms of deductive, analogical, and inductive reasoning although it is noted that the term "methodology" is more suited to research in the sciences than in the humanities.[23]

Khushal Vibhute and Filipos Aynalem have defined doctrinal legal research as research into legal doctrines through analysis of statutory provisions and cases by the application of power of reasoning.[24] This is by evaluating

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[14] C.M. Campbell, 'Legal Thought and Juristic Values' (1974) 1(1) British Journal of Law and Society 13, 15.

[15] Duncan, N. J. & Hutchinson, T. (2012). Defining and describing what we do: Doctrinal legal research. Deakin Law Review, 17(1), pp. 83–119.

[16] Ibid.

[17] Desmond Manderson and Richard Mohr, 'From Oxymoron to Intersection: An Epidemiology of Legal Research' (2002) 6(1) Law Text Culture 159, 161. For a breakdown of empirical and doctrinal PhDs in Australia see Desmond Manderson, 'Law: The Search for Community' in Simon Marginson (ed), Investing in Social Capital (University of Queensland Press, 2002) 152.

[18] Ibid., p. 131.

[19] Amrit Kharel, supra 4.

[20] Amrit Kharel, supra 4 and 19.

[21] P. Chynoweth, Legal research in the built environment: A methodological framework Type Conference or Workshop Item URL (2008) pp. 670 -680 Available at http://usir.salford.ac.uk/12467

[22] Ibid.

[23] Ibid.

[24] Khushal Vibhute & Filipos Aynalem, Legal Research Methods, Teaching Material, Justice and Legal System Research Institute, Ethiopia, 70 (2009).

legal rules and is based on the definitions provided by the scholars and it can be determined that legal research is an analytical study of existing laws, related cases, and authoritative materials as a whole, on some specific matter.[25] It can be considered as relatively a theory-testing research which endeavors to seek whether theory involved within the subject is so far valid or not. This form of legal research deals with verifying existing knowledge on the legal issues and usually begins with developing a legal proposition and the entire analysis of the data from primary and secondary authorities and is focused on testing the proposition.[26] The next stage in this analysis is the impact of doctrinal research method and issues that need to be explored in the paradigm of discipline and the effect of laws and the language of the law.[27]

There is an imperative in doctrinal research to connect the descriptive and the normative concepts because "many legal research questions are not descriptive or explanatory but normative" and they "evaluate a legal state of affairs or offer a solution to a legal problem."[28] The reasoning behind this process is that they have to provide a solution within a "normative framework" which is more focused and while a "theoretical framework can provide support for a variety of research questions, a normative framework is specifically needed to provide standards for evaluation."[29]

There is a transition between the doctrinal legal scholarship towards a more vocation based legal scholarship that is premised on the movement away from the "doctrinal research towards a more empirical and theoretical way of legal investigation and offers a fresh perspective" on the research question of the legal academics. This form of research considers the consequences which follow the organization of the legal discipline by law faculties and discusses the general framework of academic research environment.[30]

This is an emerging trend of this 'empirical legal research' approach, which has gained traction in the US and is gradually gaining ground in Europe as a variation of legal sociology.[31] It does not develop abstract grand theories, but is essentially a critique of the implied assumptions of the law or the impact of legislation. It should be obvious that such empirical testing is worthy of research but also necessary in the context of comparative legal research. In some instances a broader range of comparative evaluation that is international in scope is designed for gaining more information in comparison with purely domestic research within a single jurisdiction. This form of doctrinal research technique applies the methodology of comparative research by using "one or more of the varying methods known in the social sciences. Mainly qualitative methods will be used, but increasingly attempts are made to use quantitative methods" in this evaluation.[32]

Frans Leeuw has argued that "traditional legal scholarship is under pressure and debates are taking place on the aims and methods of the academic study of law," which "range from the 'disruptive' influence that digitization, machine learning and Big Data may have on the profession."[33] This extends to the methodology of legal studies in "the relationship between empirical research and normative questions and the difficulties lawyers have in incorporating results from empirical studies into normative scholarship and practice."[34]

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[25] Ibid.

[26] Ibid., at 71.

[27] Doctrinal inquiry involves deriving answers to legal questions from the study of existing legal provisions, which are reflected in legislation and case law, as well as commentaries provided on these sources within literature, thereby assuming that these legal provisions are internally coherent and consistent' (Vranken 2009,) J.B.M. Vranken, 'Methodology of Legal Doctrinal Research: A Comment on Westerman', in: M.A.A. van Hoecke (ed.), *Methodologies of Legal Research*, Oxford: Hart Publishing, pp. 546–547.

[28] Sanne Taekama, Theoretical and Normative Frameworks for Legal Research. Putting Theory into Practice. Law and Method (2017) https://repub.eur.nl › pub › RePub-111977-OA

[29] Ibid.

[30] Jan Smits, *The Mind and Method of the Legal Academic*, Edward Elgar Publishing (2012) 1.

[31] W. van Boom, 'Empirisch privaatrecht. Enige beschouwingen over de rol van empirisch onderzoek in de hedendaagse privaatrechtswetenschap', 2013 Tijdschrift voor Privaatrecht, no. 1, pp. 7–84.

[32] Ibid.

[33] Frans Leeuw, Empirical Legal Research : The Gap between Facts and Values and legal Academic Training. Ultrecht Law Review, 11 (2), July 2015, 19–33.

[34] R.K. Bullis, 'Promoting Communications Between Social Scientists and Lawyers', 2014 The Jury Expert 26, no. 4, pp. 2, 3.

However, Ho and Kramer have argued that there is "a 'revolution' taking place in law with reference to the percentage of research papers published in the Stanford Law Review articles mentioning the word 'empirical' over a period of almost 60 years." This has led them to consider this a seismic change even if a word count is not a concrete indicator of the empirical procedures of legal researchers and invoking this word does not necessarily mean that empirical research has been conducted.[35]

Seidman, Diamond and Mueller evaluated the content of 60 law review volumes published between 1998 and 2008 and concluded that their "content analysis revealed that by 2008 nearly half of law review articles included some empirical content" and that the analysis by "original research is less common."[36] They evaluated 60 law review volumes in the sample which published 1,641 articles in the years 1998 to 2008 and only a small percentage of the articles (5.7%) presented original empirical research, nearly half (45.8%) included some empirical content. In 26.4% of the articles, the use of empirical findings was minimal, and in 13.7% it was more substantial.[37] This form of transition from doctrinal to an empirical based technique in legal research has been affirmed by Klick who has studied the content of eight journals publishing in the field of law and economics. His findings state that the "share of empirical articles only declined for one journal while for the others it increased, though not dramatically or revolutionarily."[38]

There is an overlap between the doctrinal, empirical, and professional legal research in academic law because "the traditional stand-alone Law School – physically and intellectually insulated from colleagues in the social sciences that may have facilitated and reinforced a narrow doctrinal approach to legal scholarship in the past" have given way to "integration of many Law Schools into wider Faculties ought to provide opportunities for greater interaction, cross-fertilisation of ideas and development of collaborative partnerships."[39] The classic legal scholarship stems from the classical "dogmatic lawyering in much the same way that corpus linguists try to complement work by the sages of media theory" who traditionally relied "on an intuitive grasp of social reality, the new legal empiricists turn to data and statistical analysis."[40] The unification of both these approaches from different fields is in essence "their joint interest in institutions and how power originates in language and discourse, and, methodologically, their conversion from eminence—to evidence—based thinking."[41]

It has been argued that the academics and practitioners who rely on law professors use the "textual analysis, practical argumentation and reasoning to find the best answers to legal questions that arise from existing or theoretical legal conflicts."[42] The judges in framing their reasons for decisions apply the same logic as in "dissertations and monographs" in legal literature and their methods are identical. This has been defined as the "trinity of judicial practice, legal scholarship, and legal education" in which the research follows the same principles in assimilating knowledge.[43]

The convergence brings together the scholar, the practitioner, and the judge in the understanding and interpretation of legal rules. Universities contribute directly to the induction by training lawyers to carry out research once professional levels are attained.[44] It has been argued that progress in "European or (inter)national case law and legislation, as well as new developments in society, need to be integrated" and the imperative is to improve "coherence and consistency, creating and streamlining a system."[45]

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[35] D. Ho, L. Kramer, 'Introduction: the empirical revolution in law', 2013 Stanford Law Review 65, pp. 1195–1202.

[36] S. Seidman Diamond & P. Mueller, 'Empirical Legal Scholarship in Law Reviews', 2010 Annual Review of Law and Social Science 6, p. 581.

[37] Ibid. p. 587.

[38] Jonathan Klick, The Empirical Revolution in Law and Economics: Inaugural Lecture for Erasmus Chair in Empirical Legal Studies (Erasmus Law Lectures). Eleven International Publishing (November 8, 2011).

[39] Hazel Gunn, Martin Partington, Sally Wheeler, Law in the Real World, Improving our understanding of the law works, Final Recommendations, Nuffield Inquiry of Empirical Legal Research (2006) p. 31,

[40] Vogel Friedemann, Hanjo Hamann and Isabelle Gauer, Computer-Assisted Legal Linguistics: Corpus Analysis as a New Tool for Legal Studies, Law and Social Inquiry, Vol. 43, Issue 4, Fall 2018, 1340–1363.

[41] Ibid.

[42] Jan Vranken, Exciting times for Legal Scholarship, Boom Juridischtijdschriften (2012)https://www.bjutijdschriften.nl/tijdschrift/lawandmethod/2012/2/ReM_2212-2508_2012_002_002_004

[43] Ibid.

[44] F. Schauer, *Thinking Like a Lawyer. A New Introduction to Legal Research*. Cambridge (MA) 2009, p. 11.

[45] R. Stürner, Das Zivilrecht der Moderne und die Bedeutung der Rechtsdogmatik,' *Juristenzeitung* 2012, pp. 10–24.

The overlap between doctrinal research and practitioner research can be discerned by the prevailing view that academic legal research does not require its own methodology, standards, and rules. The difference between doctrinal and empirical research and professional research is that academic legal professions involve a "high level of documentation and information processing, storage, and retrieval;" the responsibility of legal academics is such that internet processing to expedite the "documentation, management and information handling" is not only important, but "professionally binding."[46] The emphasis is on the importance of "accuracy, correctness, completeness, relevance, and timeliness" that need to be prioritized when reliance is placed on the internet to do research to meet a lawyer's information requirements.[47] Thus, it becomes necessary to investigate how digital technology is being harnessed to support the work environment of the academic lawyer.

ACADEMIC RESEARCH AND THE VIRTUAL LIBRARY

Increasing levels of internet research in academia show up in law lecturing. The framework for lectures is based on the concept of web-based research that focuses not just on the *source* of information, but also the legal rules and precedence. To do this, lecturers must understand how to complete the research as well as know the nuances of legal language to arrive at a basis of understanding legal principles. When interpreting statutory provisions, this process takes account of the information available through access to digital technology as well as interpretations of legislators' intent.

Digitalization has greatly influenced the process of searching for and collecting legal sources through tools such as the internet. It has been argued that "the interplay of Code algorithms and big data are increasingly pervasive in the governing, leadership and practices of different professional groups."[48] This means challenges in the process of collecting relevant sources are complicated by the fact that growing amounts of sources are stored in different files across a number of databases. The choice of databases that the researcher will use as resources may persuasively influence research outcomes and these "need to be made with caution and profound source-usage that assumes the research results may not be dependent on advice and consultation."[49]

Since society itself is changing in the digital age, technological innovation, economic transformation, and specialized knowledge of a particular area of law is also likely to be replaced by more contemporary findings. The critique of this development is based on the assumption that "processes of change associated with digitalization is further accelerating the economization and commodification of the practice of law, whereby lawyers are decreasingly disinterested brokers in society and defenders of the public good, and increasingly service firms at the cutting edge of the capitalist economy."[50] With society becoming more technocratic, the proper and systematic review of existing knowledge of the legal market is essential at both the practical and academic level for the professor.[51]

The methodology for internet research begins with establishing a working definition of digital rights. This acts as a foundational framework to develop criteria which incorporates statutes, court precedent, and case commentary. It includes the entire legal landscape, encompassing all laws and regulations, including international legal instruments binding on the state.

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[46] J.E. Owoeye, Information Communications Technology (ICT) Use as a Predictor of Lawyers Productivity, Library Philosophy and Practice e Journal, 11/2011, University of Nebraska. https://digitalcommons.unl.edu/libphilprac/662.

[47] Ibid.

[48] Tom Fenwick, Richard Edwards, Exploring the impact of digital technologies on professional responsibilities and Education. European Educational Research Journal, Vol 15, Issue 1, 2016 https://journals.sagepub.com/doi/full/10.1177/1474904115608387.

[49] P.G. Korrel & O.W.M. Kamstra, *Sociaal wetenschappelijke & juridische methodologie*. Amsterdam: Melkman 1991 p. 18; R.A. Posner, *The problems of Jurisprudence*, Harvard: Harvard University Press 1993 p. 70; M. Salter & J. Mason, *Writing Law Dissertations*. Harlow: Pearson Education 2007 p. 6. J. Smits, *The Mind and Method of the Legal Academic*, Cheltenham: Edward Elgar Publishing 2012. p. 37.

[50] Salvatore Caserta & Mikael Rask Madsen, "The Legal Profession in the Era of Digital Capitalism: Disruption or New Dawn?," Laws, MDPI, Open Access Journal, vol. 8(1)(2019) pp. 1–17.

[51] Section 23 (2) of the Legal Services Act allows a range of Alternative Legal Service Providers that provide unregulated legal services providers, which includes charities, not for profit public, community interest company, independent trade union. These bodies can offer legal services on their own account without additional authorization, for example as an SRA-regulated independent solicitor.

The new Directive (EU) 2019/790 on copyright and related rights in the Digital Single Market with amendments to Directives 96/9/EC and 2001/29/EU came into effect on May 17, 2019.[52] This Directive has augmented the copyright rules on research, education, and cultural heritage in order to provide greater access to scientific material by creating exceptions to data protection. It states in its preamble:

> New technologies enable the automated computational analysis of information in digital form, such as text [that] can in particular benefit the research community and, in so doing, support innovation [and that in the EU they are] confronted with legal uncertainty as to the extent to which they can perform text and data mining of content [and that this requires] the processing of large amounts of information with a view to gaining new knowledge and discovering new trends possible.[53]

The Directive intends to remove legal ambiguity in the law and make a more transparent and verifiable regime of licensing, and there are strong rules for downloading copyrighted material without permission.[54] This is framed in Title IV on Protection of Press Publications concerning online material in the electronic media. Article 11 requires search engines and news aggregators to pay licensing fees when snippets of content are presented on their sites. However, text links "accompanied by individual words" can be shared without a licensing agreement. Article 13 requires platforms such as YouTube and Facebook to monitor content uploads and filter potentially infringing material before it's published online.

There are concerns about the effectiveness and accuracy of such filters and potential censorship implications. The public policy developments are an intrinsic part of modern governance and it anticipates two key areas: e-commerce, including the role and responsibilities of online intermediaries such as Google, Facebook, and Uber; and data ownership that relates to "infrastructure" in which "the hardware in public spaces, such as sensors, that collect human data are accessible by the government" where an "open architecture" that can be regulated by the government and the method of "data is collected" can be "refined."[55]

The professional legal researcher needs to be aware of the framework that relates to the classification of laws into "legal foundations, fundamental rights and freedoms, governance of online and networked spaces, sectoral laws and other laws and is a required norm in defining its scope and limitations."[56] This is reflected in "each environment where these classifications are applied to understand the nature of laws affecting cyberspace, and more particularly, the entire concept of digital rights that involve research methodology."[57] This requires, for example, an understanding of the difference between a law report and a judgment.[58]

Professional research in the legal industry is about access to information on the internet with its range of publishers and portals that enable the practitioner's outreach to be enhanced. These are applications of IT knowhow that foster access to legal websites and subscriptions to law journals on the internet which in turn provide information for the legal professional. The relationship between the internet and legal research is not just a matter of doctrine but increasingly intermixed with technology, economics, and the consumer market for legal services.

The virtual library has greatly facilitated the lawyer's work. In the early 1990s, the proliferation of information available on the internet produced new challenges for the distribution and dissemination of legal information.

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[52] Regulation (EU) 2016/679 of the European Parliament and of the Council of April 27, 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

[53] Parah 8 of the preamble. Directive (EU) 2019/790 on copyright and related rights in the Digital Single Market https://eur-lex.europa.eu/eli/dir/2019/790/oj.

[54] Article 15 Rights in Publications.

[55] Bianca Whiley, Governance and How Code is Becoming Law, Centre for International Governance Innovation, Data Governance in the Digital Age, Special Report (2018) 86–92. https://www.cigionline.org/publications/data-governance-digital-age.

[56] Jessica Dheere, A Methodology for Mapping the emerging legal landscape for human rights in the digitally networked sphere. Global Information Society Watch (2017) https://www.giswatch.org/en/report-introduction/metodology-research-laws.

[57] Ibid.

[58] See, e.g., P. Leith et al. 'Rewarding Merit in Judicial Appointments? A research project undertaken by the School of Law, Queen's University Belfast for the Northern Ireland Judicial Appointments Commission', January 2013. Available at http://www.nijac.gov.uk/index/what-we-do/publications/qub_final_report_merit_2013.pdf.

Search engines enhanced information sharing and expanded global access to information by allowing researchers to find online content through keyword searches.[59] The search engine operators' ability to control access to information needed caution because of issues such as data protection,[60] trademark[61] and copyright infringement,[62] consumer protection, competition law, and free speech.[63]

Google has been at the forefront of online search since the 1990s and it serves as a leader of search technology in general. It incorporates technologies such as *machine learning and networking* alongside complex algorithms to create a very sophisticated search environment, which in research terms can be compared to artificial intelligence (AI) or robotics. Legal researchers use these technologies to mine information through the metadata.

Joanne Frears states that effective search tools in virtual libraries can sometimes even match the research skills of lawyers. She argues that:

> [s]earching has evolved and data libraries give up their deepest secrets to powerful digital interrogators whose inherent search facilities interpret results, test right and wrong outcomes to verify them and assess suitability - and they can include the 'down the rabbit hole' case law gems we previously believed only a trained legal professional could find. This technology is just that though - intelligent, trained and inexhaustible, the consummate professional driven to achieve the right outcome.[64]

There is corroboration of the accumulation in digital technology in the IT applications for use by law firms with in-house virtual libraries. Loyita Worley, Director of Library Operations at Reed Smith, notes that searching through multiple databases is simply not efficient:

> The lawyers of today and the future are looking for a single resource that is easily searchable, contains all relevant legal materials from case law, legislation, precedents – both internal and external – and other practical resources such as regulatory materials, calculators, relevant industry news etc. They don't want to – nor do they have the time in this competitive arena where we are moving away from hourly rates and towards fixed fee - to be doing multiple searching.[65]

The availability of search tools like Google aids in the effectiveness of research for the legal discipline despite the lack of a uniform search tool for lawyers, although various software products are making progress in this area. Ross Intelligence, a portfolio company of Dentons' legal technology accelerator Nextlaw Labs, has harnessed the power of IBM Watson to provide a methodological tool for research.[66] It also provides predictive data, particularly in absorbing huge amounts of information.[67]

The legal technology for operational efficiency has a framework in which software developers focused on the efficient running of software in virtual libraries. The data collected can be 'mined', subject to complying with data protection laws. There is also data which relates to the functioning and specialization. It can be used for lecturing with greater accuracy vis-à-vis AI technology, which is the instrument that serves in the university environment for lecturers.

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[59] See Retail Servs., Inc. v. Freebies Publ'g, 364 F.3d 535, 541 n.1 (4th Cir. 2004).

[60] See Eugene Volokh, Google: First Amendment Protection for Search Engine Results, Volokh.com, Apr. 20, 2012, http://www.volokh.com/wp-content/uploads/2012/05/SearchEngineFirstAmendment.pdf.

[61] See generally Rosetta Stone Ltd. v. Google, Inc., 676 F.3d 144 (4th Cir. 2012)(alleging direct, contributory, and vicarious trademark infringement liability for search engine using third-party advertising keywords).

[62] See Jack M. Balkin, The Future of Free Expression in a Digital Age, 36 PEP. L. REV. 430 (2008) (addressing the challenges to free speech protections.

[63] See generally Rosetta Stone Ltd. v. Google, Inc., 676 F.3d 144 (4th Cir. 2012)(alleging direct, contributory, and vicarious trademark infringement liability for search engine using third-party advertising keywords).

[64] Alex Heshmaty Legal Research: What does the future hold. 4/5/18 https://www.lexisnexis.co.uk/blog/future-of-law/legal-search-what-does-the-future-hold.

[65] Ibid.

[66] This implies that academics may need to spend less time on formulating instructions for search engines. Law Society document, Capturing Technology Innovation Report, January 2007, p. 28. https://www.lawsociety.org.uk › research-trends › documents › capturing-t.

[67] Ibid.

LAW AND LANGUAGE IN DIGITAL INFORMATION

Digitized information supports the process of legal problem solving by using corpus linguistic methods. This implies the production of computer-supported analysis of monitored pre-processed corpora of legal texts used to analyze legal semantics, language, and socio semiotics in different working contexts. This is over the spectrum of the judiciary, legislature, legal academia, and the legal practitioners such as barristers and solicitors. It does not aim to substitute hermeneutic procedures with algorithms, but to complement them. Empirical data and computer algorithms can only support legal research, but decision making will always be "cognitive processes of contextualization" of legal problem solving.[68]

The interface of law and language has been measured in a case study. It brought together members from the fields of law, linguistics, and computer science to build an infrastructure for legal linguistic analysis. This is the CAL2 corpus in action that explores the possibilities and limitations of using parts of the corpus data gained from digital enhancement of legal precedence.[69] The study takes account of a new set of legal reference corpora, namely, the *CAL^2 Corpus of German Law* (*Juristisches Referenzkorpus*, JuReko) and the *CAL^2 Corpus of British Case Law*, both of which lay the foundation for a *CAL^2 Corpus of European Law*.

The implementation of the platform comprises three parts. First, frequency lists will be created to derive the 200,000 most frequent lemmas (nouns/verbs/adjectives) of the corpus. This evaluated the context profiles for statistical multi-level-context-analysis that contain co-occurrences and usage patterns according to the metadata (for example when the expression was used most frequently). Second, an attempt to measure the rigidity of expressions to calculate how fixed or varied the expressions are in different contexts. The researchers then examined semantic similarity in legal texts by clustering similar context profiles and visualizing the results as self-organizing maps.[70]

This was a comparative study of the linguistic formulation of the "employee" concept in UK and EU court decisions, the judgments made by the UK Employment Appeal Tribunal [UKEAT], and the employment law-related judgments from the Court of Justice of the European Union [EUECJ]. The choice of the term "employee" was motivated by several considerations, which were that employment law is one of the most dynamic legal domains. Since it does not regulate behavior of the legal subjects directly, but confines and develops individual rules, which in turn regulate the relevant affairs, the working techniques involved are complex and hardly have legal benchmarks to compare with another legal equation.[71]

The development of terminology in this legal domain is, therefore, especially complicated, which has made the study of any employment law-related notion highly innovative. Also, the term "employee" is an especially important concept in the framework of employment law because employment law is by nature employee *protection* law.[72] This legal field mediates the relationship between employees, employers, trade unions, and the government. Legal academics also need to be aware of contract law in this legal domain.

The terms used and linguistically produced appear after conceptualization and interpretation by academics who understand the use of a term both as a regular native speaker and as a legal professional. They are informed of the definition and the legal force of a term in its legal context, but are still confined by the limitations of individual intuition about the frequency and the pragmatic implications of the usage. Thus, AI technology has helped to define the concept of "employee" at the dynamic user level and the rights in the contractual relationship.

This has promoted court decisions to be recorded in the UK by the introduction of technology when judges can rely on their decisions with the necessary technical data. For example, the provision of videoed witness statements or testimony make unnecessary the in-court attendance of parties in person, but there are concerns about the bias such videoed testimony raises in jury deliberations compared to live testimony.[73] Such judicial rulings,

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[68] Supra 79, 85. Ibid.

[69] F. Vogel, H. Hamaan, I. Gauer, Computer assisted legal linguistics: Corpus analysis as a new tool for legal studies, Law and Social Inquiry (2017) https://onlinelibrary.wiley.com/doi/full/10.1111/lsi.12305.

[70] Ibid.

[71] Y. Bai, I. Gauer, H. Hamann, F. Vogel, Computer assisted Legal Linguistics (Cal 2) An Interdisciplinary approach. (2017) p9 https://www.birmingham.ac.uk/Documents/college-artslaw/corpus/conference-archives/2017/general/paper246.pdf.

[72] A. Hueck, A., & H.C. Nipperdey (1957). Lehrbuch des Arbeitsrechts. Berlin: Vahlen.

[73] Bindman, Geoffrey, and Karon Monaghan. JAC Report: Judicial Diversity: Accelerating Change. (2014) https://jac.judiciary.gov.uk/sites/default/files/sync/news/accelerating_change_finalrev.pdf.

also known as 'non-automated dispute resolution,' will be overshadowed by this new technology in the future development in judicial contexts.[74]

However, court decisions are a specialized type of text production, which are highly contextualized and constrained by the legal knowledge stored on the internet. As we have seen, the formulation of language involving the use of the term "employee" is thus subject to a special format as well as semantics according to corresponding legal conventions. The CAL 2 research helped to reveal the conception of "employee" at the underlying institutional level. The outcomes of that study established that in terms of the frequency distribution of various "employee" concepts, and the usage patterns of the term, there were both commonalities and differences in UK and EU court decisions. This is achieved through analyzing the compounding and phrasal structures, the genre-specific co-occurrence partners, and the predication patterns of the term "employee."

The CAL2 project engaged the framework of the corpus-assisted legal linguistics and digitally formulated comprehensive and balanced corpus of legal texts and developed accompanying analytical tools. The approach was intended to construct possible interpretations more visible on the internet and thus make the law more transparent by algorithmically searching for and analyzing recurrent speech patterns and expressions in the linguistic jargon of legal texts. With a case study analyzing the conception and use patterns of the legal term "employee," the findings showed the possibility of identifying "conceptual sediments" that exist as parameters in the European manner of legal analysis.[75]

DIMENSIONS OF ACADEMIC-PROFESSIONAL COLLABORATION

The research methodology in academic legal research has to take account of legal precedence or *stare devises*. This is a fundamental essence of texts in the common law tradition, and it is just one aspect of civil law. It has been argued that in virtually all legal systems there is a nexus between the law and language and legal text consisting essentially of a body of "black-letter print that has been granted authority as a result of being formally enacted by some orderly procedure."[76]

Enhanced digital technology is contributing hugely to the legal profession and enabling website providers to compete on equal or more favorable terms. It is also helping lawyers "provide reserved activities and black letter law better, more efficiently and cheaper, to service clients in the private sector."[77] The potential collaboration between law firms and the academic sector[78] can be enhanced with the objective to "produce future graduates with the skills to utilize the legal technology and platforms within the sector."[79] There are indications of these developments, and in some areas of law particularly receptive to automation, digital technology is helping to link academic lawyers to the legal market and framing legal ethics in this sector.

The efficiency of technology has led to the adoption of 'cyber ethics' to monitor the very different impacts that the growing use of technology is having on the practice of law.[80] The issues raised include the individual responsibility of a user who depends on an algorithm that incorporates a false statement made automatically on their behalf and for mechanisms to be developed for its prevention.[81]

The occupational goals of lawyers can be facilitated by solutions-based packages for the legal sector, and the prospect of working more ethically in the legal market. It also saves public expenditures. For example, the Law

[74] The impact of ODR technology on Dispute Resolution in the UK (2016) Thomson Reuters, p. 9 https://blogs.thomsonreuters.com/legal-uk/wp-content/uploads/sites/14/2016/10/BLC_ODRwhitepaper.pdf.

[75] F. Vogel, H. Hamaan, I. Gauer, Computer assisted legal linguistics: Corpus analysis as a new tool for legal studies, supra 79.

[76] Lawrence M. Solan, *The Language of Judges*. Chicago: University of Chicago Press. (1993) Linguistic Issues in Statutory Interpretation. In *The Oxford Handbook of Language and Law*, ed. Peter Meijes Tiersma and Lawrence Solan, (2012)87–99. Oxford: Oxford University Press. ——.Can Corpus Linguistics Help Make Originalism Scientific? Yale Law Journal Forum (2016), 126:57–64.

[77] Dan Bindman, Legal Technology: The future of the legal profession. https://www.legalfutures.co.uk/features/legal-technology-the-future-of-legal-services.

[78] See, e.g. https://www.legalfutures.co.uk/latest-news/law-firms-join-forces-with-university-in-lawtech-initiative.

[79] Ibid.

[80] Ibid.

[81] Ibid.

Society in England and Wales has partnered with "an incubator" to make it easier for law firms to support legal technology providers and to eliminate the uncompetitive practices of law firms.[82] The expectation is for a digital technology-led transformation in legal services to assist smaller firms in the same manner as the French Bar's *Jamaica sans mon avocat*.[83]

The access to digital technology comes with the provision and familiarity of consumer practice and industry use. It also seems probable that increasingly the training of lawyers by academic institutions will have a law tech component, and law firms will insist on general digital competence. More recently, an OECD paper on the impact of technological innovation on legal practice has observed:

> It is apparent that, even if legal professionals were able to maintain exclusivity, the market in which they operate will change dramatically. Some disruptive innovations that will impact the industry are being developed outside existing regulatory frameworks. But even regulatory compliant innovation may challenge market structure…[84]

This has been interpreted as increasing the challenges of legal education in the technical, regulatory, and jurisdictional sectors.

The growth of AI will assist lawyers by elevating their practice and incorporation of legal technology to the "next level" by machine learning, particularly in incorporating huge amounts of information, such as contract review for electronic disclosure. The Law Society partner and Equity Crowd funding platform has attributed six benefits of IT to the legal sector which are:

(i) Practice management automation,
(ii) Predictive coding,
(iii) Document assembly,
(iv) Voice recognition,
(v) Chat bots and DIY law, and
(vi) Legal research which is facilitated by the educational online legal information sources such as LexisNexis and Practical Law.

These platforms are "constantly improving their search algorithms to help lawyers find the most relevant material pertaining to their case."[85] There are also some AI tools that are more advanced and can assist "lawyers to form a case strategy based on previous outcomes in similar cases (for example, Lex Machina)."[86]

The framework of digital technologies in the form of legal information on the internet is aimed at improving case management, marketing, internal operations and services and, crucially, in legal research. The methodology of research for legal sources on the internet has acquired a commercial dimension and the legal practitioners at all levels are dependent on access to the latest information about statutes, case law and other legal texts. They can depend upon the academic sector to transfer their skills to practitioners to increase their knowledge of and adherence to legal ethics, and AI that can assist them in resourcing a virtual library.

CONCLUSION

Doctrinal legal research in the age of digital technology is driven by the need to achieve an optimum level of rigorous analysis. It also aids in building creative analogies by deriving general principles from a collective mass of

[82] Eduardo Reyes, Education is Ready for Anything. 26/2/18 https://www.lawgazette.co.uk/features/education-ready-for-anything/5064951.article.

[83] Never Without My Lawyer. Jonathon Goldsmith Embracing the IT Revolution, 29/10/18 https://www.lawgazette.co.uk/commentary-and-opinion/embracing-the-it-revolution/5068084.article.

[84] Protecting and Promoting Competition in response to Response to "Disruptive" innovations in Legal Services paragraph 74 (2016) Organisation of Economic and Cultural Development (OECD) (2016) paragraph 74, available at: https://one.oecd.org/document/DAF/COMP/WP2(2016)1/en/pdf.

[85] Six Ways the legal sector is using A1 right now, Seedrs, 13/12/18 https://www.lawsociety.org.uk.lawsociety.org.uk/news/stories/sixways-thelegal-sector-is-using-AI.

[86] Lex Machina (acquired by LexisNexis) filters through vast amounts of US case law to predict outcomes of various legal strategies. There is also the utilization of evidence search tools that are being effectively used to reduce the costs and time of e-disclosure, in a process known as predictive coding.

primary materials. It is sustained by a positivist view of law, and there is also sociolegal research and critical studies of legal principles that have accompanied its progress as an academic discipline. Measuring the success of this project will be based on how the professional can assimilate the technology while digital technology provides a means to optimize their professional goals.

The research environment has been transformed by search engines like Google, and the platforms that offer software training along with access to legal websites. The specialized platforms and portals provided by Lexis and Westlaw enable the legal practitioner to be informed of the latest developments in the law within a virtual library. The methods of lawyers generally have to be adapted to integrate this technology so that they apply legal precedence with greater assurance and certainty to legal rules.

Digital technology available for lawyers is developing rapidly, and the AI environment is moving in to replace personnel in technical roles in the legal office. There should be homogenization of technology in the research sector to enable lawyers to be fully grounded in the available software. This will generate benefits from the virtual library and make internet research for precedent more user friendly.