

PART X

THE DIGITAL REVOLUTION

CHAPTER 2

THE JUSTICE SYSTEM TAKES ACCOUNT OF THE (SOCIAL, ECONOMIC) DIGITAL REVOLUTION: EVIDENCE LAW ADJUSTED TO DIGITALLY STORED INFORMATION

Magne Strandberg

<https://www.cplj.org/publications/9-2-the-justice-system-takes-account-of-the-digital-revolution-evidence-law-adjusted-to-digitally-stored-information>

TABLE OF CONTENTS

1 Digital Revolution, Legal Evolution	1
2 The Ideology of Free Proof and a Technology-Neutral Starting Point.....	3
3 Inclusion of Digitally Stored Information in Established Means of Evidence System	6
3.1 Redefining Means of Evidence	6
3.2 Integrity and Authenticity	11
3.2.1 The Digital Revolution and the Growing Importance of Integrity and Authenticity.....	11
3.2.2 Legal Approaches to Integrity and Authenticity	12
3.2.3 Summing Up.....	18
4 Access to Electronically Stored Information	19
4.1 Discovery and Disclosure in Anglo-American Jurisdictions.....	19
4.2 E-Discovery and E-Disclosure	20
4.3 Technology-Assisted Review	25
4.3.1 What is TAR?	25
4.3.2 Court Practice Concerning TAR from Common Law Jurisdictions	26
4.3.3 TAR Outside the Common Law Jurisdictions?	33
4.4 Informal Methods of E-Evidence-Gathering (Self-Help)	37
Abbreviations and Acronyms	41
Legislation	43
International/Supranational	43

National.....	43
Cases	45
National.....	45
Bibliography	47

1 DIGITAL REVOLUTION, LEGAL EVOLUTION

- 1 The civil justice system, as a whole, is aimed at solving legal disputes within society. Whenever society changes, the civil justice system must keep up to date and at one should at least consider whether the system shall transform or adjust. A civil justice system which was fit and adequate in an agricultural era is not necessarily up to date after the emergence of bourgeois craftsmanship or the outbreak of an industrial revolution. Arguably, the wave of civil justice reforms in Europe during the last decades of the 1800s and the first decades of the 1900s¹ was at least partly a consequence of the Industrial Revolution. The best example seems to be found in England, the birthplace of industrialism. The old English system of the writs, established for a time of agriculture and feudalism, could during the 1800s no longer provide effective and accurate justice.² In a time of industrialization and emerging societal and legal complexity, a procedural system presuming the categorization of any dispute into one single formal writ was not easily applicable. After decades of criticism and calls for reforms from Jeremy Bentham and many others, the civil justice system was overhauled by the reform of 1873 where new civil procedure rules were enacted for the High Court, the Court of Appeal, and the Supreme Court.³ Arguably, the communist revolutions of Eastern Europe in the second half of the 1900s also left the civil justice systems with a new political and societal framework to which it had to adapt. Resulting in a more bureaucratic and hierarchical court system provided for the inclusion of overarching ideological ambitions, Eastern Europe at the time gave inspiration for one of Damaska's famous two faces of justice.⁴
- 2 The digital revolution is the deepest and most pervasive economic, societal, and cultural transformation of our times. Deeply intertwined with globalization, both contemporary post-industrialized societies and other societies throughout the world have been massively affected by the transformation into a digital era. Although the digital revolution is not at all an overnight recalcification of society, changes have been rapid at least when considering the massive, deep, and broad impact digitalization has had on communication and daily life of most human beings all over the globe. Just as the civil justice system in general and procedural law especially has been adopted to previous social transformation, further changes should at least be considered after the recent emergence of the digital revolution. However, massive alterations of a civil justice systems or an entire legal system are not a necessary or inescapable consequence of broad or deep political, cultural, or

¹ At that time overhauling reforms took place in at least England and Wales, Germany, Austria, and the Scandinavian countries.

² G Vos and J Sorabji, 'Digital Technology and the Development of Holistic Dispute Resolution' in X Kramer et al (ed), *Delivering Justice. A Holistic and Multidisciplinary Approach. Liber Amoricum in Honour of Christopher Hodges* (Hart Publishing 2022) 247.

³ J Sorabji, *English Civil Justice after the Woolf and Jackson Reforms. A Critical Analysis* (Cambridge UP 2014) 31 ff.

⁴ M R Damaska, *The Faces of Justice and State Authority. A Comparative Approach to the Legal Process* (Yale UP 1986).

societal changes. Broad and deep alterations of the civil justice system do not just suddenly happen and at least a period of transition is to be expected.

- 3 Chapter 2 is devoted to measures and actions aimed at taking account of the digital revolution within procedural systems which were not originally constructed for a digital era. When taking existing or traditional procedural law and systems as its starting point, this chapter deals with how procedural systems have been adopted, reformed, or adjusted to fit with a new technological landscape. Obviously, the digital revolution causes legal evolution. But what sort of evolution? Legal evolutions may be of many varieties; slow or fast, deep or superficial, theoretical or practical, by formal legislation or by informal changes of customs. Even though the nature of the digital revolution, a global and globalizing phenomenon, probably has world-wide common features, its effects on a civil justice system may vary from one jurisdiction to another. This chapter will try to advance our understanding of the nature and specificities of these legal changes, in particular the development of different jurisdictions and the comparison of these developments.
- 4 Since the digital revolution potentially affects the entire civil justice system, there is a need for narrowing the scope of this chapter in order to dwell in more detail on selected elements of legal development. Although many elements of civil procedure law could have been subject to such analysis, evidence law seems to be especially suitable. Evidence law is of high practical significance in all jurisdictions,⁵ the elements of evidence law are more or less globally distinguishable (meaning that the over-arching systematization of evidence law could be used to analyze most jurisdictions),⁶ and the upcoming of digital evidence is a distinct effect of the digital revolution on any civil justice system. Furthermore, the digital revolution and evidence law have an important common feature: both regard information and use of information.
- 5 So, the basic questions for this chapter are: Firstly, has the digital revolution brought changes in evidence law, such as rules on access to evidence, production of evidence or taking of evidence? Have changes taken the form of new formal legislation, development of binding court-practice, or mere informal and non-binding changes of customs or habits? Are the changes deep (eg, altering of fundamental procedural principles) or superficial

⁵ In common law jurisdictions this is found for instance in the widely held 'rationalist tradition of evidence scholarship', see W Twining, *Rethinking Evidence. Exploratory Essays* (2nd edn, Cambridge UP 2006) 35 ff. For a European perspective: C H van Rhee and A Uzelac, 'The Pursuit of Truth in Contemporary Civil Procedure: Revival of Accuracy or a New Balance in Favour of Effectiveness?' in C H van Rhee and A Uzelac (ed), *Truth and Efficiency in Civil Litigation* (Intersentia 2012) 3, 3. On the Scandinavian tradition: P Westberg, *Anskaffning av bevisning i dispositiva tvistemål* (Nordstedts Juridik 2010) 10–13.

⁶ This does, of course, not mean that there is one globally acknowledged systematization of evidence law, it only means that certain categories of evidence rules exist and may play the role as an analytical tool for a comparison or a singling out of legal developments.

(changes within existing procedural principles)? Have the changes been rapid or slow, frequent or rare?

- 6 Secondly, has evidence law been adapted in time or in a proper manner to adapt adequately to the digital revolution? Have changes of law been taken after changes in technology or have procedural legal reforms been taken in order to (further) develop new technology or to improve the use of technology in civil procedure? Have lack of changes or flexibility of evidence law caused obstacles to the proper use of digital evidence or digital techniques?
- 7 Thirdly, what sort of information technology is in use in current evidence law or practice and what has pushed the development?

2 THE IDEOLOGY OF FREE PROOF AND A TECHNOLOGY-NEUTRAL STARTING POINT

- 8 Somewhat surprising, perhaps, the best starting point for analysing adjustments of evidence law to the hyper-modern digital revolution is an old, classical, and prominent aspect of procedural law: the ideology of free proof. A free proof system is characterized by absence of legislation or other binding rules concerning the probative value of evidence, the types of admissible evidence, and where standards of proof do not require a specific type of evidence. Basically, modern systems of evidence law are free from historic systems of formal or legal proof where the law for instance prescribed full proof to consist of two witnesses, a confession (if necessary taken under torture), or a statement confirmed by so and so many free men.⁷ Since the fading away of the medieval systems of legal proof seems to have started in the second half of the 1700s, the free proof ideology was probably inspired by the world-view of the Enlightenment era, its belief in human beings' ability to autonomously and rationally evaluate evidence in order to access truth, and the general belief in information as basis for choosing between competing or alternative stories. Although the history of the breakthrough of modern⁸ principles of proof in its details is unique for each country, in most jurisdictions these principles were established either by binding case law or legislation by the end of the 1800s. For instance, the free proof ideology dates back to Bentham and case law developments in the

⁷ F ex J H Langbein, *Torture and the Law of Proof. Europe and England in the Ancient Régime* (The University of Chicago Press 1976/2006); J Q Whitman, *The Origins of Reasonable Doubt. Theleological Roots of the Criminal Trial* (Yale UP 2008); G Deppenkemper, *Beweiswürdigung als Mittel prozessualer Wahrheitserkenntnis. Eine dogmengeschichtliche Studie zu Freiheit, Grenzen und revisionsgerichtlicher Kontrolle tatrichterlicher Überzeugungsbildung (§ 261 StPO, § 286 ZPO)* (V&R Press 2004) 19–224; H Pihlajamäki, *Evidence, crime and the legal profession: the emergence of free evaluation of evidence in the Finnish nineteenth-century criminal procedure* (Lund 1997).

⁸ Versions of such principles existed in Roman law, see f ex J Sladic and A Uzelac, 'Assessment of evidence' in V Rijaved, T Kerestes and T Ivanc (ed), *Dimensions of European Civil Procedure* (Wolters Kluwer 2016) 107, 108.

common-law countries, while it is a rather complex development varying from state to state in the Germanic area.⁹

- 9 The ideology of free proof contains at least two principles; free admission of evidence, and free evaluation of evidence. Modern evidence law, not necessarily in contrast to older formal or legal proof systems, orients towards the best possible evidential situations. In order to achieve that, the principle of free admission of evidence shall ensure that, in general, relevant evidence is admissible and thereby not hidden from the decision-maker.¹⁰ In party-driven litigation, this implies a right for parties to offer whatever relevant evidence they like. Judges are obliged to admit relevant evidence unless some specific reason justifies a need for keeping information secret and thereby establishes a privilege or another kind of non-admissibility rule.¹¹ The principle of free evaluation of evidence is a freedom and obligation for the judge to decide on the matter in accordance with his inner conviction based on the evidence.¹² Paternalistic rules which attached a predefined probative value to certain types of evidence are replaced by rules trusting the judges with the competence to assess each case separately after having heard all evidence.
- 10 In theory, jurisdictions based on a free proof ideology, should be well served whenever the epistemological landscape changes, for instance when new technology provides new sources of information or when existing sources of information could be gathered or interpreted by new technology. Essential for the free proof ideology is that evidence law should not in general favour one medium over another, be it technology-based or paper-based, oral or written. A free proof ideology encourages the best evidence to be produced and to be presented in its best possible fashion, and the impact of a piece of evidence should depend on its evidential value no matter whether the evidence is presented in this or that mode, style, or technology. Hence, what is currently known as the technology-neutral principle is,¹³ at least for evidence law, a trivial derivation from old, well-established general principles.
- 11 However, the introduction of new technology to evidence law is not always straightforward. The first reason for this is the free proof ideology itself. While principles of free admission and evaluation of evidence do not hinder the application of technological improvements, neither do these principles provide guidelines for when and how to use such technology. The broad and open character of these principles leaves evidence law underdetermined, which means that it is for the judge to determine for

⁹ On the Germanic countries: Deppenkemper (n 7) 225 ff. On the Scandinavian countries (especially Finland): Pihlajamäki (n 7). On the common law history where free proof during the 1800s took over from technical and detailed rules of the writ system: W Twining, *Theories of Evidence: Bentham and Wigmore* (Stanford UP 1985).

¹⁰ See f ex ERCP Rules 89(1) and 92(1), and USFRE Rule 402.

¹¹ See f ex ERCP Rule 91 and USFRE Rules 501 and 502.

¹² See f ex ERCP Rule 87.

¹³ See section 1 above.

instance how evidence should be produced in order to get presented in its best possible version. Such a decision may be challenging, especially when a new type of evidence arises because of the development of new technology.

- 12 Secondly, while modern evidence law is based on general principles of free proof, most jurisdictions also consist of a high number of detailed, technical rules which govern most of the everyday practice of evidential matters. For instance, most jurisdictions have a catalogue of established types or means of evidence including rules on how a type of evidence shall be offered, presented, and responded to.¹⁴ Legal technicalities may stop technical development. Technicalities of evidence may potentially obstruct the development of new types of digital evidence because such new forms or varieties of evidence may not fit into existing categories.
- 13 Thirdly, the principles of free proof are not and have never been, the only principles of evidence law. In many jurisdictions, recent reforms established principles moderating the free admission of evidence. Best known, perhaps, is the establishment of the principle of proportionality (proportionate justice) in England and Wales after the Woolf-reform.¹⁵ Such a principle has also had a breakthrough in many other jurisdictions,¹⁶ and it is a cornerstone of the ELI/UNIDROIT Model Rules.¹⁷ A principle of proportionality implies a reduced ambition concerning the quantity of evidence being presented and perhaps also the quality of evidential situations. While previous guidelines linked to a principle of substantive truth and an ambition of getting the best possible evidential situation in all cases, a goal of proportionate justice implies that not more time and money should be spent on a case than what is reasonable compared to the value or importance of the claims. Within a principle of proportionality, truth-seeking and reducing the risk or substantive error must be balanced against the goal of saving time and money.¹⁸ However, a higher number of substantive rights or claims may be enforced even though the risk of error inclines because a higher number of potential litigants may commence proceedings and stand trial when costs are reduced. Within a principle of proportionality, quite advanced and complicated assessments must be taken not only to find the appropriate level of time and cost, but also to decide on which evidence shall be left aside when admitting all evidence would be disproportionate. Modern technology may provide solutions to some of these assessments. Taking statements from witnesses online could at least save travelling costs and would make the appearance for witnesses easier to combine with other tasks that day. Hence, evidence which otherwise would have been

¹⁴ F ex ERCP Rules 111 ff, GCCP §§ 371 ff, EWCRP Part 32, USFRE Articles V-VIII, NCCP ch 23-26.

¹⁵ H Woolf, *Access to Justice: Interim Report to the Lord Chancellor on the Civil Justice System in England and Wales* (HMSO 1995), H Woolf, *Access to Justice: Final Report to the Lord Chancellor on the Civil Justice System in England and Wales* (HMSO 1996). See also A A S Zuckerman and R Cranston (ed), *Reform of Civil Procedure* (Oxford UP 1995), Sorabji (n 3).

¹⁶ F ex USFRCP Rule 26 (b) (1) after amendment of 2015, NCCP § 1-1 and § 21-8 both from a reform of 2005.

¹⁷ ERCP Rules 5-8.

¹⁸ F ex A Stein, *Foundations of Evidence Law* (Oxford UP 2005) 12–25, 214–219.

disproportionate becomes proportionate when technology is used. In other cases, however, the use of technology enhances costs and may only be suitable in large cases and if it leads to certain pay-offs. In this scenario, a judge may have to decide on whether technology shall be used, or which type of such technology shall be applied.¹⁹

3 Inclusion of Digitally Stored Information in Established Means of Evidence System

3.1 Redefining Means of Evidence

- 14 In accordance with the principles of free proof, electronically stored documents are commonly used in civil and commercial life and are expected to be used as evidence in modern civil proceedings. The technology neutrality principle means that any technology-based documents with structured information ‘in the form of words, sounds or images’, should be deemed functionally equivalent to their paper counterpart in terms of probative (evidentiary) value.²⁰ Even though both the principle of free admission of evidence and the technology neutrality principle obviously imply that relevant evidence is admissible regardless of their form, most jurisdictions have lists or categories of established means of evidence. Although such lists are not necessarily exhaustive, many specificities concerning taking of evidence are prescribed for each means of evidence. Not at all disregarding the practical importance of the abstract principles of free proof, most everyday decisions on taking of evidence are related to specific and relatively detailed regulations for mainly predefined types of evidence. Although both a functional perspective taken on the basis of the principle of technology neutrality and an ideological or epistemological perspective taken on the basis on the free proof principles suggests that digital evidence obviously should be allowed regardless of their form, the technical side of (national) evidence regulations may provide practical and formal hindrances to the inclusion of digital evidence.
- 15 Probably, jurisdictions all over the world have faced a challenge where basic principles clearly require evidence of a new form to be included while on the other hand, an important legal tool for taking evidence may have to be altered or adjusted in order to open the door for such new forms of evidence. Different jurisdictions may have chosen different paths for including digital evidence, jurisdictions may have been more or less successful in their transformation and the potential tension between basic principles and detailed regulations may have been more or less alive. Interesting questions of legal development and adjustments of law to new realities may therefore be investigated: Have jurisdictions revised their definitions of means of evidence in order to include digital evidence? Have such revisions been necessary for the admission of digital

¹⁹ See section 4 below.

²⁰ *F* ex the UNCITRAL MLEC (1996) Sec 15-18 and ERCP Sec VIII1.

evidence? Is digital evidence regarded as a separate means of evidence or included in established means of evidence?

- 16 Adaption of existing evidence law to new technology may take the form of rewriting the definitions of one or several means of evidence. Jurisdictions which acknowledge documents as a separate means of evidence may just simply adjust the meaning of 'document' in order to explicitly include electronically saved information in the list of means of evidence. A recent example is provided by the EWCPR 31.4:

'document' means anything in which information of any description is recorded; and 'copy', in relation to a document, means anything onto which information recorded in the document has been copied, by whatever means and whether directly or indirectly.

Achieved, then, is not only the inclusion of digital documents in its pure non-paper-based form, but also the inclusion of any sort of recorded information no matter whether it is a film, tape recording, painting and so on. A similar wide definition of documents is found in ERCP Rule 111(2).

- 17 Alternatively, one may widen the definition of 'tangible evidence' or 'real evidence'. The NCCP § 26-1 is a result of such an approach:

Real evidence consists of individuals and objects (real property, movable property, documents, electronically stored information etc.) where the person or object as such, or its properties, state or content, contains information that may be important to the factual basis for the ruling in the case.

That definition was a result of the 2005-reform of the Norwegian civil justice system, which resulted in a new code of civil procedure (in force from 2008) and which was based on a technologically neutral approach.²¹ However, electronically stored information could be admitted as evidence even before the 2005-reform. Even though the previous civil procedure code from 1915 did not contain any explicit definition concerning digital evidence, such evidence was admissible. Based on the principle of free presentation of evidence, a new type of evidence, or a new media in which information is stored, became admissible even though it was not included in the means of evidence listed in the code. After the 2005-reform, the legislator aims at exhaustively listing the means of evidence, but if a new type of relevant information emerges it should be accepted as evidence, if necessary, directly based on the principle of free presentation of evidence.

²¹ NOU 2001: 32 *Rett på sak*, 619. See H H Fredriksen and M Strandberg, 'Is E-justice Reform of Norwegian Civil Procedure Finally Happening?' (2016) 3(2) Oslo Law Review 72, 73–74.

- 18 In German law, electronically stored information may be offered either as documents (*Urkunde*) or evidence taken by visual inspection (*Augenscheinsbeweis*).²² GCCP § 416 is the key provision on documents as evidence, and a print of electronically stored information is regarded as documentary evidence, see § 416a which was amended by a reform of 2004. GCCP § 371(1), the basic rule on evidence taken by visual inspection, assumes that electronic documents are evidence taken by visual inspection:

Evidence taken by visual inspection if offered by designating the object to be inspected visually and by citing the facts regarding which evidence is to be provided. If an electronic document is to serve as evidence, it shall be so offered as evidence by producing or transmitting the file.

- 19 Neither part of GCCP provides an explicit definition of digital documents or digitally stored information. In practice, the concept of electronic documents has been regarded as rather wide. For instance, the BGH concluded that evidence in the form of a dashcam recording may be admitted despite of protection of data regulations.²³ Since for instance, a webcam recording is regarded as an admissible piece of evidence, the means of evidence in German law seem to be as wide as the definition of documents in for instance English law. The core of German discussions on digitally stored information has not regarded whether such information is admissible. Instead, the debates have focused on integrity, authenticity, and certain special problems concerning the evidential value of digital documents compared to for instance papers from an administrative body.²⁴
- 20 In Spain after the year 2000-reform, which introduced a new civil procedural code and overhauled the entire civil procedure law, digital evidence is in general admissible. The code is written in a technologically neutral language, and opens explicitly for the inclusion of new means of evidence, see the SPCCP Art 299 (3):

When certainty about relevant facts could be obtained by any other means not expressly provided for in the previous sections of this article, the court, at the request of a party, will admit it as evidence, adopting the measures that in each case are necessary.

²² On the distinction between *Urkunde* and *Augenscheinsbeweis*: H J Ahrens, *Der Beweis im Zivilprozess* (Otto Schmidt Verlag 2015) 561, 562–563.

²³ Case VI ZR 233/17 (BGH, Germany) Judgment 15 May 2018 [ECLI:DE:BGH:2018:150518 UVIZR233.17.0] [NJW 2018, 2883]. Further reading: H J Ahrens, 'Dash-cam-Aufzeichnungen als Beweismittel nach Verkehrsunfällen' (2018) 39 NJW, 2837; W Lüke, *Zivilprozessrecht I* (11th edn, C H Beck 2020) 296.

²⁴ F ex P P Wagner, 'Das elektronische Dokument im Zivilprozess' (2016) 50 Juristische Schulung 29–33; Lüke (n 23) 296–297.

At the start of the millennium, these open criteria were used for including e-mails and video files, nowadays have for instance WhatsApp messages and similar instant communication devices also been included.

- 21 In the Canadian province of Quebec, the principle of technological neutrality is secured by a separate cross-sectoral Act which requires the ‘functional equivalence and legal value of document, regardless of the medium used’.²⁵ A wide concept of ‘document’ is found in the Act Ch II sec 3:

Information inscribed on a medium constitutes a document. The information is delimited and structured, according to the medium used, by tangible or logical features and is intelligible in the form of words, sounds or images. The information may be rendered using any type of writing, including a system of symbols that may be transcribed into words, sounds or images or another system of symbols.

The basic ideology of the Act is that the value of a document, ‘particularly ... its admissibility as evidence, is neither increased nor diminished solely because of the medium or technology chosen’²⁶. So long as the integrity of a technology-based document can be guaranteed, the same is deemed functionally equivalent to its paper counterpart. In the alternative, the same technology-based document may still be admissible as (real or testimonial) evidence or serve as commencement of proof on the condition that its authenticity (or authorship) is established.

- 22 Although the legislative techniques are rather different in England and Wales, Norway, Spain, Canada, and Germany, all have completed a form of technological neutral law concerning the admission of digital evidence. As has been concluded in a study of evidence law in Europe, a principle of neutral technology tends to be established by widening the scope of rules concerning written means of evidence or by analogues to rules concerning traditional means of evidence.²⁷ When applying a technique of widening the scope of existing rules on evidence, normally there is not a pressing need for exact definitions of for instance digital evidence, digital information, or digitally stored information.²⁸ However, in jurisdictions where more than one category of evidence could be relevant for admission of digital evidence, a choice must be taken on which set of rules to apply for each type of digital evidence. The German distinction

²⁵ QALFIT Ch 1, sec 3.

²⁶ QALFIT Ch 2, sec 5.

²⁷ T Ivanc, ‘Theoretical Background of Using Information Technology’ in V Rijavec, T Kerestes and T Ivanc (ed), *Dimensions of Evidence in European Civil Procedure* (Wolters Kluwer 2016) 265, 281.

²⁸ S Mason, ‘Introduction’ in S Mason (ed), *International Electronic Evidence* (British Institute of International and Comparative Law, London 2008) xxxiv.

between documents and evidence taken by visual inspection is one example of a distinction originally made for physical evidence being applied for digital evidence.²⁹

- 23 Most jurisdictions seem to have taken formal amendments of their procedural codes in order to include digital evidence in the system of means of evidence. Even though digital evidence nowadays dominates the evidential situation in very many cases and undoubtedly has become a very important type of evidence, the formal inclusion of such evidence has been taken within the existing means of evidence. Hence, the system of means of evidence established in a pre-digital age, has been able to include new and radically different types of evidence.
- 24 However, there are examples of evidence which has not been admitted or disclosed because of its digital nature or situations where the digital nature of evidence has raised questions of admissibility or disclosure. Surprisingly, the rather progressive and modern Sweden struggled somewhat with the inclusion of digital evidence. The SWCP dates all the way back to 1942. The code has been revised several times, but the rules on evidence have not seen a full-fledged reform and some of the old-fashioned wordings from before VW II are still in force. The system of means of evidence developed at that time is still valid law and the basic definitions of the means of evidence have not been revised after the emergence of digital evidence. Neither are any special rules for access to digital evidence developed. CJP § 2 ch 38 contains an important rule on access to evidence, but the somewhat old-fashioned wording *skriftlig handling* (written document) still defines the scope of application for a party's obligation to produce evidence. In 1998, the Swedish Supreme Court³⁰ decided that digitally stored information was covered by the obligation to produce evidence. Hence, the opposite party could claim pre-trial access to a printed version of the file. There still was uncertainty as to whether a party could claim access to evidence in its digital form,³¹ and that was unclear until a second decision by the Supreme Court came in 2020.³² HD's decision in *Idre Fjällrestauranger AB* deals with several basic aspects on access to evidence, including whether disclosure of evidence could take a digital form. The Supreme Court concluded that such e-disclosure could be claimed; disclosure could be in the form which the party controlling digitally stored evidence had stored the evidence or in a digital form which is generally accepted for storing, using or transferring the information in question.³³ In that particular case, the party controlling the evidence had to disclose the evidence by using a SIE4 file format.³⁴

²⁹ Similar problems are found in Austria, Croatia, Poland, Finland, Romania, Estonia, and Slovenia, see Ivanc (n 27) 286–287.

³⁰ NJA 1998, 829.

³¹ P O Ekelöf, H Edelstam and L Heuman, *Rättegång IV* (7th edn, Norstedts Juridik 2009) 255 and P Westberg, *Civilrättskipning*, (2nd edn, Norstedt Juridik 2013) 292–293.

³² NJA 2020, 373.

³³ NJA 2020, 373 Sec 17.

³⁴ NJA 2020, 373 Sec 22.

3.2 Integrity and Authenticity

3.2.1 The Digital Revolution and the Growing Importance of Integrity and Authenticity

- 25 As was pointed out in chapter 1, the technology neutrality principle means that any technology-based document should be deemed functionally equivalent to their paper counterpart in terms of evidentiary value. Considering, however, the increased alterability of technology-based documents, which too often goes unnoticed to the naked eye, a full-fledged functional equivalence principle could not be achieved absent basic safeguards as to the trustworthiness of digital evidence. The issue of trustworthiness of digital evidence may be split in at least two subparts: *integrity* (non-alteration) and *authenticity* (authorship, originality, etc) of technology-based documents.³⁵
- 26 Although issues of integrity and authenticity are well-known for analog phenomena, their potential importance explodes in a digital world. Photos are one of very many examples: While analog photos could be manipulated, Stalin's erasing of Trotsky and Kamenev from a picture taken at one of Lenin's speeches is infamous,³⁶ digital photos can be manipulated very much easier, by many techniques providing potentially radical and non-trackable alterations. The same goes for documents which could be altered or counterfeited even back in the analog age, but the possibility for doing so multiplies when email replaces old-fashioned letters. Because of the enhanced risk of manipulation of digital documents, these questions have gained importance and a growing industry of experts may assist parties or judges whenever the integrity or authenticity of a digital document is questioned.
- 27 Even in cases where technology-based documents only serve as circumstantial evidence, their authenticity are ordinarily established by admissions or testimonies of persons involved in its confection, reproduction, transfer, or maintenance. Emerging, then, is a pressing need for evidence concerning the integrity and authenticity of digital evidence. Such second-order evidence, collateral³⁷ or auxiliary evidence, does not in itself contain evidentiary value, it merely affects the value of other pieces of evidence. Second-order evidence is not a consequence of the digital revolution. Second-order evidence is for instance information concerning a witness' ability to see and hear, whether the expertise of an alleged expert actually covers the particular question or issue, or whether a paper

³⁵ A similar distinction is well-established outside the English-speaking countries: In German *Integrität* and *Authentizität*, in Norwegian *integritet* and *autentisitet*. Compare S Mason and A Stanfield, 'Authenticating electronic evidence' in S Mason and Seng (ed), *Electronic Evidence* (4th edn, Institute of Advanced Legal Studies 2017) 195.

³⁶ Wikipedia, 'Censorship of images in the Soviet Union' https://en.wikipedia.org/wiki/Censorship_of_images_in_the_Soviet_Union.

³⁷ I Dennis, *The Law of Evidence* (6th edn, Sweet & Maxwell 2017) 12 who does use the term 'collateral' for evidence concerning the credibility of witnesses.

document which is presented as a genuine public or private document actually are such a document. But the digital revolution highly increases the need for second-order evidence.

- 28 The technical side of integrity and authenticity is, not surprisingly, highly advanced, and more or less specific methods are available for specific problems.³⁸ Hashing is one of many available technologies for these purposes. Exact HASH-values implies that two files are of the exact same content. Different HASH-values may not mean that the content of the files is different, at least not different in the sense which is of interest in these lawsuits. Whether two or more electronic files are of equal content may be relevant both under evidence law and under substantive law, which in its turn leaves the door open for new technological difficulties. In some cases, such a method will be of both evidential and substantive relevance, for instance when someone allegedly illegally copied files.³⁹

3.2.2 Legal Approaches to Integrity and Authenticity

- 29 Since issues of integrity and authenticity of digital documents are, in principle, no different from establishing the integrity and authenticity of paper-based documents, existing legal frameworks for analog evidence provide a plausible starting point for the evolution of evidence law into a new digital landscape. On the other hand, the growing importance of matters of integrity and authenticity when digital evidence are involved and the variety of technical challenges involved may suggest that these issues should be more thoroughly and detailed regulated. The principle of technological neutrality may suggest an approach of widening the scope of rules for physical evidence, while the exact same principle may suggest special legislation for each type of evidence so long as special challenges are involved for specific types of evidence. Interestingly, ERCP do not prefer one specific approach for dealing with integrity and authenticity of digital evidence, see Rule 111(4):

Parties may challenge the authenticity of any document submitted as evidence. In such a case, the court must order the parties to take such steps as are necessary to establish the document's authenticity.

While the parties shall have a right to challenge a document's authenticity, which in the context probably is to be read as also covering integrity, the rule does not prescribe a specific rule of method for handling such challenges. The official comments underline that different approaches are found in different European jurisdictions:

³⁸ See *f ex* Mason and Stanfield (n 35) 231 ff.

³⁹ See *f ex* *Normarc*, No 2006/90 (Supreme Court, Norway) Decision 23 May 2006 (Rt 2006), HR-2006-00867-A, 626 concerning mirror-copying of servers and hard disks in a case where former employees allegedly copied files from the company for starting of a competing business. After such mirror-copying, the HASH-value technique could reveal whether the files in possession of the former employees had been illegally copied. The case is in detail analyzed by M A Hjort, *Tilgang til bevis i sivile saker* (Universitetsforlaget 2016) 271, 307.

Parties may challenge the authenticity, accuracy or completeness of documentary evidence under Rule 111(4). In some cases, it will be a matter of the free evaluation of evidence; however, if the authorship of the document is at stake, more serious steps could be taken within the procedure or affecting its development. Specific types of proceedings to test such evidence vary across European jurisdictions, e.g., the French *inscription de faux* or the Italian *querela di falso* and are not addressed in the present Rules.⁴⁰

Apparently, two models are in play; challenges of integrity or authenticity may be handled under the evaluation of the evidence, or such challenges could be handled in a separate, specialized proceeding maintained before the evaluation of the evidence.

- 30 The model of separate, specialized proceedings for authenticity applies in Italy and France, among which we introduce Italian law only. Italian evidence law has maintained certain features remaining from the older systems of legal proof, which means that statutory provisions define certain means of evidence, under given circumstances, as sufficient proof and may provide hierarchies of the evidential value of certain means of evidence.⁴¹ According to Silvestri, documents are on top of a hypothetical hierarchy of the means of evidence:⁴²

In principle, public deeds and private writings are conclusive evidence that the statements they report have been made by the person whom the document indicates as the author of the statements themselves. It must be emphasized, though, that not even public deeds are conclusive evidence as regards the intrinsic truth of the statements they report, with the only exception concerning the statements of the public notary himself. In particular, a public deed is conclusive evidence that it was made by the public notary who signed it. It is also conclusive evidence as regards any events that the notary states as having occurred in his presence; furthermore, it is conclusive evidence as regards the performance of any acts that the notary certifies he himself has performed. In order to deprive public deeds of their special evidentiary weight a special proceeding, known as ‘querela di falso’ must be instituted. (Silvestri p. 10)

- 31 In Canada, a detailed model for handling issues of a document’s integrity (and to some degree authenticity) is in force on federal level and in most provinces.⁴³ Although the details concerning legislative style and the legal requirements differ from one province

⁴⁰ ERCP official comment to Rule 111 (4).

⁴¹ E Silvestri, ‘The Antique Shop of Italian Civil Procedure: Oath and Confession as Evidence’ in C H Rhee A Uzelac (ed), *Truth and Efficiency in Civil Litigation* (Intersentia 2012) 47. Interestingly, this is so for French law as well, see E Jeuland, ‘The Standard of Proof in France’ in L Tichý (ed), *Standard of Proof in Europe* (Mohr Siebeck 2019) 183, 184–187.

⁴² E Silvestri, ‘Evidence in Civil Law – Italy’ Department of Law University of Pavia, 10 https://pf.um.si/site/assets/files/3223/evidence_in_civil_law_-_italy.pdf.

⁴³ See f ex CEA Rule 31.

to another, they are based on certain common features. In order not to dwell on details, we limit our presentation to the province of Quebec, which was the first province to develop these rules, and which has been a role model for other provinces. In Quebec, the aforementioned Act concerning the technology-neutral principle entails a couple of solutions for disputes over the integrity of a document. QAELFIT Rule 6 defines what must be presented before a document's integrity is 'ensured' and thereby implicitly introducing a definition of 'integrity':

The integrity of a document is ensured if it is possible to verify that the information it contains has not been altered and has been maintained in its entirety, and that the medium used provides stability and the required perennity to the information.

The integrity of a document must be maintained throughout its life cycle, from creation, in the course of transfer, consultation and transmission, during retention and until archiving or destruction.

To assess the integrity of a document, particular account must be taken of the security measures applied to protect the document throughout its life cycle.

- 32 A direct proof of integrity would have need of (sophisticated) technological expertise beyond the reach and means of most parties and beyond what could be proportionate in most cases. To begin with, the law does not require positive evidence of integrity to be administered each time a technology-based document has to be adduced at trial. The law rather presumes the integrity-preserving capability of any technological media used for the purposes of communication, unless detailed challenges thereof be provided from the opposing party which tips the balance of probabilities the other way around, see QAELFIT Rule 7:

It is not necessary to prove that the medium of a document or that the processes, systems or technology used to communicate by means of a document ensure its integrity, unless the person contesting the admission of the document establishes, upon a preponderance of evidence, that the integrity of the document has been affected.

- 33 Even in cases where a technology-based document only serves as (real or testimonial) circumstantial evidence or commencement of proof, its authenticity is usually established through admissions or testimonies of the persons involved in its confection, reproduction, transfer, and maintenance. This is in fact no different from establishing the authenticity of paper documents as the story of their originating is being unfolded on the witness stand. Even though the concepts of integrity and authenticity may appear difficult to conceptualize at first glance, their application has hitherto turned out to be relatively straightforward.

- 34 Several key, characteristic features may be extracted from the Canadian model. Firstly, the detailed legislation contains both formal definitions and operational rules in order to fulfil the principle of technological neutrality. Secondly, the requirements concerning integrity are conditions for admissibility of digital documents. However, when a digital document fails the test of integrity it may still, 'depending on the circumstances, be admissible as testimonial evidence or real evidence and serve as commencement of proof, as provided for in article 2865 of the Civil Code.'⁴⁴ Thirdly, the model includes a presumption of integrity which places a burden of argumentation on the party who challenges the document's integrity and puts on a standard of evidence (preponderance of the evidence) that must be fulfilled before the presumption may be altered.
- 35 None of the Scandinavian countries acknowledge any kind of special proceedings concerning the authentication or integrity of a (digital) document or any other kind of special rule for the admissibility of such evidence. Any doubt concerning the authenticity or integrity of a (digital) document or any other piece of evidence, no matter whether it is challenged by a party or by the court on its own motion, are subject for the judge's free evaluation of evidence.⁴⁵ The Norwegian CCP of 1915 §§ 261-263 contained special rules concerning authenticity and integrity of public documents which most probably also applied to public digital documents. For public documents, § 261 established a presumption for authenticity and integrity. The presumption was rebuttable, and the burden of proof was on the party who claimed that the document was false. Pursuant to § 262, a private document itself was sufficient evidence for authenticity and integrity unless there was a concrete reason for doubt. If a party alleged that the document was false, the issue should be solved under the principle of free evaluation of evidence and based on the burden of proof for the material issue. The code of 1915 also had rules on the evidential value of such documents, for instance, did § 264 establish that a public document was sufficient evidence for a document's content unless other information suggested otherwise. These rules were probably inspired by German and Austrian law. However, these rules were not taken into the code of 2005. After the 2005-reform, there are no specific rules for authenticity or integrity of any kind of evidence. However, the parties may disagree on the authenticity and integrity of documents, the special problems concerning digital evidence are well-known⁴⁶ and there may very well be evidence offered concerning authenticity and integrity. From a functional point of view, Scandinavian law probably contains an unwritten factual presumption of a (digital) document's authenticity and integrity. According to some scholars, a party alleging that a document is false must present evidence to support that allegation.⁴⁷ Alternatively, one may say that a piece of evidence is regarded as authentic unless a party argues

⁴⁴ QAELFIT Rule 5 Sec 3.

⁴⁵ T Schei et al, *Tvisteloven kommentarutgave* (2nd edn, Universitetsforlaget 2013) 945 (Norwegian); B Gomard and M Kistrup, *Civilprocessen* (7th edn, Karnov Group 2013) 706–707 (Danish); Ekelöf. Edelstam and Heuman (n 31) 257 (Swedish).

⁴⁶ F ex Hjort (n 39) 34–35.

⁴⁷ Gomard and Kistrup (n 45) 706; P O Ekelöf and R Boman, *Rättegång IV* (6th edn, Norstedt Juridik 1992) 214.

otherwise or there are specific reasons to question the evidence's authenticity. The court may order a party and any witness to bring documents or other evidence to a court in order to examine its authenticity.⁴⁸

- 36 Although problems concerning authenticity and integrity are of growing importance in a digital age, Norwegian law has (for good reasons) deleted all special rules concerning authenticity and integrity. The rules were regarded unnecessary or partly also unjustified.⁴⁹ The burden of proof concerning a public document (§ 262), which was not a rule on admissibility, would nowadays be regarded as incoherent with the general law of evidence. In general, rules on the burden of proof (and standard of evidence) do apply for entire material issues of fact and not to specific pieces of evidence.⁵⁰ To sum up, a key characteristic of the Scandinavian regulation is that evidence will not be inadmissible because of problems of integrity or authenticity unless the evidence is regarded as lacking evidential value because of these problems. There is no formal presumption of a digital document's authenticity or integrity, but factual presumptions are most probably involved in practice.
- 37 German law seems to contain a model with these key characteristics: there are no separate proceedings for the integrity and authenticity of digital documents, no rules after which digital evidence will be regarded inadmissible because of uncertainty concerning their integrity or authentication, and these matters are more or less totally left to the judge's evaluation of evidence. However, German law contains several rules which in general terms define the evidential value of documents, see GCCP § 371a(1):

The rules concerning the evidentiary value of private records and documents shall be applied *mutatis mutandis* to private electronic documents bearing a qualified electronic signature. The appearance to authenticity of a declaration available in electronic form, as obtained from reviewing it pursuant to the Electronic Signature Act (*Signaturgesetz*), can be cast into doubt only by facts giving rise to serious doubts as to the declaration having been made by the holder of the signature key.

- 38 The integrity and authenticity of an electronic document is related to qualified electronic signature based on the *Signaturgesetz*, after which an electronic document signed with such e-signature is equivalent to a handwritten signature. The document's integrity is secured by the binding of the signature to a certain date and its authenticity is secured by the signatures binding to the person who signs it. Technically speaking, the signature program fixes a HASH value to the signed document, and that value will be changed

⁴⁸ NCCP §§ 24-4 (1) and 23-2 (2).

⁴⁹ Schei et al (n 45) 945.

⁵⁰ M Strandberg, 'Standards of Evidence in Scandinavia' in L Tichy (ed), *Standard of Proof in Europe* (Mohr Siebeck 2019) 135, 139.

whenever a person later changes the document.⁵¹ A similar provision for public documents is found in the GCCP § 371b:

The rules concerning the evidentiary value of public records and documents shall be applied *mutatis mutandis* to public records or documents that have been transformed, using the state-of-the-art technology, into electronic documents by a public authority, or a person or entity vested with public trust, and where a confirmation is available that the electronic document is a true and correct copy of the original, both as an image and in terms of its substance. Where the document and the confirmation bear a qualified electronic signature, section 437 shall apply *mutatis mutandis*.

39 When the integrity and authenticity of a private or public electronic document is secured by the means specified in the provision, the document has evidentiary value equal to an old-fashioned paper document. To sum up, the German model leaves all issues of integrity and authenticity to the final evaluation of the evidence. In that evaluation, the judge shall bring in some basic presumptions concerning the authenticity of all sorts of documents regardless of whether the documents are paper-based or in a digital format.

40 In some jurisdictions, the court may ask for the original instead of a copy either by a court order or under the threat of declaring the copy inadmissible.⁵² However, while a distinction between original and copy makes sense for analog documents, it does not for digital documents.⁵³ It is a special case of applying admissibility rules established for a paper-based age to modern documents. The challenge of such application was one of the first issues to be discussed after the emergence of digital documents, and a solution was suggested in the UNCITRAL MLEC Art 8:

(1) Where the law requires information to be presented or retained in its original form, that requirement is met by a data message if:

(a) there exists a reliable assurance as to the integrity of the information from the time when it was first generated in its final form, as a data message or otherwise; and

(b) where it is required that information be presented, that information is capable of being displayed to the person to whom it is to be presented.

41 This problem of application has been widely discussed in the common law countries. A solution similar to article 8 is found in Quebec, see QAELFIT ch 2 Sec 12:

⁵¹ Wagner (n 24) 30.

⁵² SWCP 38:1 (1), NCCP § 21-7 (2) c.

⁵³ Ivanc (n 27) 286 and Mason and Stanfield (n 35) 229.

A technology-based document may fulfil the functions of an original. To that end, the integrity of the document must be ensured and, where the desired function is to establish

(1) that the document is the source document from which copies are made, the components of the source document must be retained so that they may subsequently be used as a reference;

(2) that the document is unique, its components or its medium must be structured by a process that makes it possible to verify that the document is unique, in particular through the inclusion of an exclusive or distinctive component or the exclusion of any form of reproduction;

(3) that the document is the first form of a document linked to a person, its components or its medium must be structured by a process that makes it possible to verify that the document is unique, to identify the person with whom the document is linked and to maintain the link throughout the life cycle of the document.

For the purposes of subparagraphs 2 and 3 of the first paragraph, the processes must be based on technical norms and standards approved by a recognized body referred to in section 68.

- 42 However, most jurisdictions do not regulate these matters in detail. There are no such regulations concerning application of the distinction between copy and original in the Scandinavian countries for instance. In Sweden, SWCP § 38:1 simply reads:

Written documents invoked as evidence should be produced in the original. A certified copy may be produced if this is found sufficient or if the original is not obtainable.

- 43 Although that clause was written with old-fashioned documents in mind, it obviously applies to digital documents as well. However, neither the Swedish code nor case law prescribes the way in which such a clause shall be applied for digital documents. Since Swedish law does not contain any guidelines, UNCITRAL MLEC Art 8 may provide a possible solution. However, a more likely approach in Scandinavia is to admit the evidence even though it might be regarded as a copy, let the parties present their arguments on whether the digital document is trustworthy or not, and decide on that matter in the free evaluation of the evidence.

3.2.3 *Summing Up*

- 44 Although the integrity and authenticity of digital documents may appear difficult to conceptualize at first glance, their application has turned out to be relatively straightforward, at least in the practice of most jurisdictions analysed. An excellent

example is offered by Québec, where the law does not require positive evidence of integrity to be administered every time a technology-based document is adduced at trial. Such a direct proof would have need of (sophisticated) technological expertise beyond the reach and means of most plaintiffs. Instead, the law rather presumes the integrity-preserving capability of any technological media used for the purposes of communication unless detailed challenges thereof be provided from the opposing party and tip the balance of probabilities.

- 45 Typically, new technical innovation leads to new techniques for checking the integrity and authenticity of evidence based on that innovation. While digital evidence provides better opportunities for altering and manipulation, digital techniques also provide better opportunities for tracking down alteration or manipulation. Just as the digital revolution has brought a whole new branch of evidence, the court may use a variety of techniques in order to check the integrity and authentication of a digital piece of evidence.

4 ACCESS TO Electronically Stored Information

4.1 Discovery and Disclosure in Anglo-American Jurisdictions

- 46 Broad and general rights to access evidence is a paradigmatic feature of Anglo-American civil procedure law. Rules on discovery were established way back in the history of common law jurisdiction, for instance dates one of the leading court decisions – *Peruvian Guano* – all the way back till 1882.⁵⁴ According to Adrian Zuckerman, '[t]he modern history of the law of civil procedure is in a large measure the history of the evolution of discovery from its Chancery origins.'⁵⁵ While *discovery* is the traditional keyword in all common law countries, *disclosure* is used in England and Wales after the Woolf-reform from the late 1990s.⁵⁶ Discovery or disclosure is a set of rules obliging any party and many third parties to disclose relevant evidence, in the US also information which may lead to relevant evidence, no matter whether the evidence is positive or negative for his case, to the opposing party. The available discovery/disclosure devices vary quite a lot from one common law jurisdiction to another where the US rules, since the emergence of USFRCP in 1938,⁵⁷ are most open and liberal in the sense that they provide the most far-reaching demands on parties' disclosure. A joint feature of discovery and disclosure, which

⁵⁴ *Compagnie Financière et Commerciale du Pacifique v Peruvian Guano Co* (1882) 11 QBD. 55.

⁵⁵ A Zuckerman, *Zuckerman on Civil Procedure. Principles and Practice* (2nd edn, Thomson 2003) 539.

⁵⁶ A little confusion is still in place since 'disclosure' is used in US for the initial part of discovery, see USFRCP Rule 26.

⁵⁷ G C Hazard, 'From Whom No Secrets Are Hid' (1998) 76 *Texas Law Review* 1665, 1694; S N Subrin, 'Fishing Expeditions Allowed: The Historical Background of the 1938 Federal Discovery Rules' (1998) 39 *Boston College Law Review* 691; J H Langbein, 'The Demise of Trial in American Civil Procedure: How It Happened, Is It Convergent with European Civil Procedure?' in R H Rhee and A Uzelac (ed), *Truth and Efficiency in Civil Litigation. Fundamental Aspects of Fact-finding and Evidence-taking in a Comparative Context* (Intersentia 2012) 119; R Marcus, 'Looking Backward to 1938' (2014) 162 *University of Pennsylvania Law Review* 1691, 1693–1695. The rules apply to Federal courts only, but most American states have emulated them.

distinguishes common law jurisdictions from most other jurisdictions, is that parties are required to exchange relevant documents and other evidence at a very early stage of proceedings. Normally, disclosure and discovery are in action after commencement and before trial. Another characteristic feature is that especially American Discovery is a basically privatized institution.⁵⁸ While the court most certainly has a role to play during discovery or disclosure, especially when the parties are not able to agree on the way to proceed, ideally speaking these mechanisms work between the parties without the court's assistance.

- 47 Even though instruments similar to discovery or disclosure are known outside common law jurisdictions, the common law countries are best suited for analysis of the impact of the digital revolution on legal demands on access to evidence. Since rules on discovery and disclosure was well-established before the digital revolution, analysis of US law, English law, and Canadian law are well suited for regarding whether access to digital evidence are approached similar to access to other evidence. Furthermore, since discovery or disclosure are of high practical significance in these countries, one would expect that efforts to find practically working solutions for a digital age have been taken. Experiences from these jurisdictions may therefore signal what other jurisdictions may face if they invent access to evidence rules similar to the Anglo-American.
- 48 Discovery and disclosure serve several purposes. Firstly, and most basically, open and early access to all relevant evidence for both parties, are regarded as a means for truth-seeking.⁵⁹ When both parties have access to all evidence, for all pieces of evidence at least one party will have both an interest in bringing that evidence to court and will be able to present it. Secondly, discovery or disclosure reduces the risk of ambush and surprise during trial. Thirdly, these mechanisms are intended to promote settlements based on well-informed negotiations where no party should have the benefit of hiding his or her best cards.⁶⁰ Fourthly, also in other contexts than negotiations for settlement, these mechanisms are intended to reduce the advantage of having exclusive access to evidence.

4.2 E-Discovery and E-Disclosure

- 49 Although discovery and disclosure are well-established, important parts of Anglo-American civil procedure law, they have also been subject to critique and multiple reforms. While a discussion of the high number of reforms in each jurisdiction would lead to very many details, we will introduce the adjustments taken in order to update discovery and disclosure for a digital era. In the US and other common jurisdictions, a

⁵⁸ G C Hazard, 'Discovery and the Role of the Judge in Civil Law Jurisdictions' (1998) 73 *Notre Dame Law Review* 1017, 1019; R L Marcus, 'Cooperation and Litigation: Thoughts on the American Experience' (2013) 65 *Kansas Law Review* 821, 841–843; S Dodson, 'Cooperativism in the American Adversarial Tradition' (2021) 40 *Civil Justice Quarterly* 283.

⁵⁹ Subrin (n 57) 739–740.

⁶⁰ M Rosenberg, '*Federal Rules of Civil Procedure in Action: Assessing Their Impact*' (1989) 137 *U. Pa. Law Review* 2197, 2198.

concept of e-discovery has been developed since the start of the millennium and e-discovery has become a massively growing industry.⁶¹ Formally speaking, E-discovery is just the use of discovery devices in order to get access to electronically stored information. However, e-discovery is substantially different from the old-fashioned discovery of paper-based documents. While discovery of documents back in the day was characterized by tons of paper loaded into offices reviewed by a team of lawyers (solicitors) and paralegals, nowadays documents are stored digitally and reviewed by one or a few lawyers together with digital experts and their IT-programs and algorithms.

- 50 In the US, most elements of e-discovery are regulated by general rules on discovery of documents. The concept of document is wide and explicitly covers all sorts of electronically stored information, see USFRCP Rule 34(a)(1)(A):

any designated documents or electronically stored information—including writings, drawings, graphs, charts, photographs, sound recordings, images, and other data or data compilations—stored in any medium from which information can be obtained either directly or, if necessary, after translation by the responding party into a reasonably usable form.

- 51 However, special rules of two kinds apply for discovery of electronically stored information. Firstly, some special provisions specify and to some degree limit discovery of such information and provide parties with special objections against discovery requests.⁶² Secondly, other special provisions deal with the methods or forms in which electronically stored information may be disclosed, se USFRCP Rule 34(b)(2)(E):

ii) If a request does not specify a form for producing electronically stored information, a party must produce it in a form or forms in which it is ordinarily maintained or in a reasonably usable form or forms; and

(iii) A party need not produce the same electronically stored information in more than one form.

In practice, the matter of finding the most suitable form and method for e-discovery is the most important.⁶³

- 52 In England and Wales, disclosure of digitally stored information is dealt with by general provisions in the Civil Procedure Rules chapter 31. The English civil justice system is

⁶¹ See R L Marcus, M H Redish, E F Sherman and J E Pfander, *Civil Procedure A Modern Approach* (7th edn, West Publishing 2018) 369.

⁶² F ex USFRCP Rule 34(b)(2)(D).

⁶³ See Sec 4.3 below.

famous for frequent reforms,⁶⁴ which during the last two decades also have concerned disclosure of electronic documents, see for instance the Jackson-report:

On 22nd June 2009 I attended an e-disclosure demonstration at 4 Pump Court chambers. Three different specialist providers each took data from the Enron case and demonstrated how their respective software systems could search, sample, categorise and organise the data. The object of each of these systems is (i) to whittle down as far as possible the potentially relevant documents which will be passed to the lawyers for review and (ii) to enable the lawyers to search and organise documents passed to them. I am bound to say that the systems developed by each of those specialist providers are extremely impressive. I am sure that it would assist other members of the judiciary to know what technological help is available to the parties, to enable them to manage the disclosure process.⁶⁵

- 53 Prior to the Jackson-reform, a Practice Direction concerning disclosure of electronic documents came into force in 2010.⁶⁶ That PD followed up on the broad definition of 'documents' in the general rules on disclosure and defines 'Electronic Document', 'Keyword search', 'Metadata' and several other technological concepts of importance under e-disclosure.⁶⁷ Unless the judge decides otherwise, the PD applies only to multi-track cases.⁶⁸ The intention of the PD is neither to broaden nor narrow the extent or number of documents or e-files being disclosed, rather it is to encourage parties to cooperate and prepare the ground for effective and proportionate agreements on access to electronically stored documents.⁶⁹ The PD especially underlines that parties when considering disclosure of electronic documents shall bear in mind these general principles:

(1) Electronic Documents should be managed efficiently in order to minimise the cost incurred;

(2) technology should be used in order to ensure that document management activities are undertaken efficiently and effectively;

(3) disclosure should be given in a manner which gives effect to the overriding objective;

⁶⁴ See S Clark and R Jackson, *The Reform of Civil Justice* (2nd edn, Sweet and Maxwell 2018) 11–20, Sorabji (n 3).

⁶⁵ R Jackson, Review of Civil Litigation Costs: Final Report (The Stationery Office 2009) 365.

⁶⁶ UK Ministry of Justice, 'PD 31B – Disclosure of Electronic Documents' https://www.justice.gov.uk/courts/procedure-rules/civil/rules/part31/pd_part31b.

⁶⁷ EWCP Rule 31.4 and PD 31.1 and 31.5.

⁶⁸ PD 31.3.

⁶⁹ PD 31.2.

(4) Electronic Documents should generally be made available for inspection in a form which allows the party receiving the documents the same ability to access, search, review and display the documents as the party giving disclosure; and

(5) disclosure of Electronic Documents which are of no relevance to the proceedings may place an excessive burden in time and cost on the party to whom disclosure is given.

54 The PD also includes detailed rules on mandatory discussions between the parties, especially concerning the use of technology, before the first case management conference.⁷⁰ Annexed to the PD is the Electronic Documents Questionnaire, which contain questions concerning what a party may disclose and what that party expects the opposite party to disclose. The questionnaire also contains questions on which methods a party would recommend, including which keywords that could be used.

55 In Canada, e-discovery is mainly regulated on the basis of the Sedona Canada Principles Addressing Electronic Discovery.⁷¹ These principles are non-binding soft law agreed upon by a working group of experts, but many common law provinces and territories of Canada have developed a set of rules on the basis of the principles. The guiding principles are the discoverability of electronically stored information, cooperation between parties and judges, and proportionality.⁷² When deciding on proportionality, these factors shall be taken into account:⁷³

- i. the nature and scope of the litigation;
- ii. the importance and complexity of the issues and interests at stake and the amounts in controversy;
- iii. the relevance of the available electronically stored information;
- iv. the importance of the electronically stored information to the Court's adjudication in a given case; and
- v. the costs, burden and delay that the discovery of the electronically stored information may impose on the parties.

56 Even though the principle of proportionality in most provinces applies for discovery in general, it is of especial significance for disclosure of electronically stored information because of the potential costs and burdens involved for such information.⁷⁴ In order to

⁷⁰ PD 31.8 and 9.

⁷¹ 'The Sedona Canada Principles Addressing Electronic Discovery' (2022) 23 The Sedona Conference Journal 160–329.

⁷² Sedona Principles 1, 2 and 4 (n 71).

⁷³ Sedona Principle 2 (n 71).

⁷⁴ Sedona Principle 2 comments at 182 (n 71).

obtain proportionality and to resolve disagreements at an earliest possible time, parties are obliged to cooperate in setting an e-discovery plan, see Sedona Principle 4:

Counsel and parties should cooperate in developing a joint discovery plan to address all aspects of discovery and should continue to cooperate throughout the discovery process, including the identification, preservation, collection, processing, review, and production of electronically stored information.

- 57 This principle of cooperation in good faith is a general element of discovery and it is of special importance because of the alterability of digital information. Somewhat related to the principle of cooperation, as soon litigation may be anticipated, parties are required to ‘consider their obligation to take reasonable and good-faith steps to preserve potentially relevant electronically stored information’. ⁷⁵ Within the e-discovery plan, the parties may discuss and hopefully agree on use of technology. ⁷⁶ In line with this, Principle 7 makes clear that parties are entitled to use ‘electronic tools and processes to satisfy its discovery obligations.’ While the Sedona Principles do not in general recommend specific types of technology, the official comments contain thorough discussions over available tools, their pros and cons, and what is suitable under what circumstances.
- 58 Although the style of specialized regulation for discovery or disclosure of digitally stored information varies quite significantly from one common law jurisdiction to another, quintessential elements of content are recognizable in both the US, England and Wales, and many provinces of Canada. In all these jurisdictions, the aim of e-discovery or e-disclosure regulation is to make operational the traditional rules on access to evidence for a new type of information. Hence, all jurisdictions aim at upholding rights of broad and quite general discovery or disclosure within the era of digital revolution while at the same time respecting the limits of such rights. All jurisdictions also aim at making the best possible use of new technology within e-discovery or e-disclosure. The choice of the best possible technology is to some degree based on formal regulations, but in practice, the decisions must be taken from case to case. If parties agree on the choice of technology, that would in general be respected by the court. However, the court must decide on these matters whenever the parties do not agree.
- 59 A process of e-discovery normally is distinguished into a set of phases. According to the Electronic Discovery Reference Model (EDRM), ⁷⁷ such a process starts with the identification, preservation, and collection of relevant documents. Thereafter, e-discovery goes on with a phase consisting of processing, review, and production of evidence. Questions on which technology to apply might be raised at all these stages

⁷⁵ Sedona Principle 3 (n 71).

⁷⁶ Sedona Principle 4 comments at 219–220 (n 71).

⁷⁷ Sedona Principles 192–193 (n 71) and ‘EDRM Diagram Elements’ <https://edrm.net/resources/frameworks-and-standards/edrm-model/edrm-diagram-elements/>.

and several forms of technology have been developed for each phase. We will not dwell on all these phases but will concentrate on the choice of technology for review, which arguably may be regarded as the most debated choice-of-technology question within e-discovery of e-disclosure in all common law jurisdictions. The commonalities of both phases of such processes and the choice of technology are underlined by the mutual relevance of court practice on these matters across common law jurisdictions.

4.3 Technology-Assisted Review

4.3.1 What is TAR?

- 60 Since rules on discovery or disclosure basically provide a pre-trial obligation of any party or third party who controls evidence to make that evidence available, very often a collection of documents must be reviewed in order to filter out the evidence that is relevant and not privileged. If a party controls a large number of documents, a typical situation after a digital revolution, an information overload problem arises. Within common law jurisdictions, methods of review have been developed in order to bring up as much relevant and non-privileged evidence as possible for the least amount of time and money in situations of information overload. Traditionally, a method of manual review has been applied. An exhaustive manual review means that one or several human beings examine each document in the collection, and code them as responsive or not.⁷⁸ An alternative method is Technology-assisted review (TAR)⁷⁹, also known as computer-assisted review (CAR)⁸⁰ or predictive coding⁸¹. TAR leaves the review to an interplay between humans and machines:

A technology-assisted review process involves the interplay of humans and computers to identify the documents in a collection that are responsive to a production request, or to identify those documents that should be withheld on the basis of privilege. A human examines and codes only those documents the computer identifies – a tiny fraction of the entire collection. Using the results of this human review, the computer codes the remaining documents in the collection for responsiveness (or privilege).⁸²

⁷⁸ M R Grossman and G V Cormack, 'Technology-Assisted Review in E-Discovery Can Be More Effective and More Efficient Than Exhaustive Manual Review' (2011) 2(3) *Richmond Journal of Law and Technology* 1, 4.

⁷⁹ Ibid 1–48, G Christian, 'Predictive Coding: Adopting and Adapting Artificial Intelligence in Civil Litigation' (2019) 97 *The Canadian Bar Review* 486.

⁸⁰ *Triumph Controls UK Ltd v Primus International* (Technology and Construction Court, UK) Judgment 7 February 2018, [2018] EWHC 176 (TCC) Sec 6.

⁸¹ See also J Sorabji, 'Compliance Problems and Digitizing Case Management in England and Wales' in R Assy and A Higgins (ed), *Principles, Procedure, and Justice. Essays in Honour of Adrian Zuckerman* (Oxford UP 2020) 153, 174.

⁸² Grossman and Cormack (n 78) 3–4.

- 61 TAR involves machine learning combined with algorithmic tools, such as metadata searching, contextual searching, and concept searching.⁸³ The application of TAR on a set of documents includes several steps:

The first step in the use of predictive coding for document review would require developing a 'seed set' or 'training set'. This refers to a set of documents that is randomly or judgmentally selected as sample from the entire document set to be reviewed. A person very knowledgeable with the litigation (usually a senior lawyer) would then review each of the documents in the seed set and code them accordingly. The coded documents from the seed set are then fed into the predictive coding software to 'train' the software. The software analyzes the seed set for common concepts. From this analysis, it develops an internal formula for future prediction.

The software is then made to apply the algorithm in coding documents from the universal set. Samples from the computer coded documents are then reviewed by the lawyer(s), corrected and fed back into the system. The 'training' of the software continues with further coding and feeding of documents until the software 'learns' sufficiently to achieve a desired or acceptable rate of accuracy. The software is then made to apply the algorithm to the entire document set, coding documents and classifying them accordingly.⁸⁴

- 62 Normally, TAR is used in two stages of discovery or disclosure.⁸⁵ Firstly, it may be used to identify those documents in a party's possession that are relevant for the case (relevance review). Secondly, it may be used for filtering out privileged documents (privilege review). Privilege review is the most difficult and sensitive one. Of course, a party would normally not want to have privileged information spread, and disclosure of privileged information will in most circumstances imply a waiver.⁸⁶
- 63 In its use of machine learning, TAR also deviates from the well-established use of keywords in searching for relevant information. TAR is far more advanced than using keywords, but on the other does the use of TAR require more development of the searching mechanism in each particular case. One of the advantages of TAR is that it is able to search for words in context is an advantage of TAR compared to traditional keyword search.

4.3.2 Court Practice Concerning TAR from Common Law Jurisdictions

- 64 For many years, manual review was regarded as the only technique securing all relevant documents to be included, and all privileged documents to be excluded. At best TAR was

⁸³ Christian (n 79) 492.

⁸⁴ Christian (n 79) 497.

⁸⁵ Christian (n 79) 494.

⁸⁶ Christian (n 79) 494–495.

acknowledged as more efficient, meaning that money and time could be saved. TAR got its breakthrough after two pilot tests suggested that TAR is both more cost-efficient than manual review, and it yields more accurate results with lower effort.⁸⁷ Nowadays, TAR is a well-known tool for e-discovery or e-disclosure which is mentioned in standard literature both in the US,⁸⁸ Canada,⁸⁹ and England and Wales⁹⁰. Application of such a method has been dealt with in judgments from all these jurisdictions, and experiences from these cases both illustrate the common use of TAR and problems it may raise.

- 65 Application of TAR in discovery proceedings was first brought to court in *Da Silva Moore and others v Publicis Groupe SA and MLSSGroup*,⁹¹ a case concerning gender discrimination against one of the big four advertising conglomerates in the US. According to the plaintiffs, Publicis had a systemic, company-wide policy which left women out of level positions and led to lower salaries for women. The defendants suggested TAR for review of approximately three million electronic documents, and the judge – one of very few judges who was both trained in and enthusiastic about TAR at that time⁹² – approved the suggestion:

The decision to allow computer-assisted review in this case was relatively easy – the parties agreed to its use (although disagreed about how best to implement such review). The Court recognizes that computer-assisted review is not a magic, Staples-Easy-Button, solution appropriate for all cases. The technology exists and should be used where appropriate, but it is not a case of machine replacing humans: it is the process used and the interaction of man and machine that the courts need to examine.

- 66 Furthermore, the judge underlined that TAR enhances the prospects of the inclusion of relevant documents and exclusion of irrelevant documents and has the ability to do so as cheaply and fast as possible. According to the judge, TAR is better than the alternatives, including keyword searches, and the application of such a review should be in accordance with the spirit of the civil procedural rules:

While this Court recognizes that computer-assisted review is not perfect, the Federal Rules of Civil Procedure do not require perfection.

⁸⁷ Grossman and Cormack (n 78) 48 and H L Roitblat et al, 'Document Categorization in Legal Electronic Discovery: Computer Classification vs. Manual Review' (2010) 61(1) Journal of American Society Information Science & Tech 70.

⁸⁸ F ex Marcus et al (n 61) 370

⁸⁹ Sedona Principles (n 71) 247–248.

⁹⁰ Sorabji (n 81) 174.

⁹¹ *Da Silva Moore and others v Publicis Groupe* (US District Court Southern District of New York) 287 FRD 182 (2012), 868 F Supp 2d 137.

⁹² The judge was Andrew Peck, author of 'Search Forward: Will Manual Document Review and Keyword Searches be Replaced by Computer Assisted Coding?' (2011) New Jersey Law Journal.

The court summed up:

In this case, the Court determined that the use of predictive coding was appropriate considering: (1) the parties' agreement, (2) the vast amount of ESI to be reviewed (over three million documents), (3) the superiority of computer-assisted review to the available alternatives (i.e., linear manual review or keyword searches), (4) the need for cost effectiveness and proportionality under Rule 26(b)(2)(C), and (5) the transparent process proposed by MSL.

- 67 For the application of TAR, the court stressed the need for cooperation between parties and the need for transparency. The court decision was appealed, but the appeal was not successful.⁹³
- 68 In *Progressive Casualty Insurance Company v Delaney*,⁹⁴ the parties agreed on a jointly proposed ESI protocol that was approved by the court. Under the protocol, Progressive should scan the entire group of 565,000 documents and chose manual review for doing so. When having spent several months, Progressive concluded that the discovery proceeding became unacceptably costly and unilaterally opted for predictive coding of the documents. The opposite party disagreed on the suggested use of TAR, at least given the proceeding's history, and the court was asked for a decision. The judge refused Progressive's request to use TAR on these grounds: Progressive had unilaterally abandoned a protocol agreed between the parties and approved by the court, Progressive had not offered a new cooperative and transparent protocol, and Progressive was only willing to review a fraction of the documents. Importantly, the refusal of TAR was not due to the general features of such a method but to the concrete circumstances of the case and especially the non-cooperative conduct of the party requesting TAR.⁹⁵ If the parties to begin with had agreed on TAR based protocol, the court 'would not hesitate to approve a transparent, mutually agreed ESI protocol'.⁹⁶
- 69 A similar situation occurred in *Bridgestone Americas Inc. v International Business Machines Corp.*⁹⁷ After the parties agreed on a protocol, which was approved by the court, the plaintiff was left with 2 million documents after having searched with keywords selected by the defendant. The plaintiff considered the cost of manual review extraordinarily high and therefore asked the court for permission to change to TAR.

⁹³ *Da Silva Moore and others v Publicis Groupe* (US District Court Southern District of New York) Opinion and Order on 25 April 2012, No 11 Civ. 1279 (ALC) (AJP).

⁹⁴ *Progressive Casualty Insurance Company v Jackie Delaney* (US District Court District of Nevada) Opinion and Order 13 November 2014, WL 12785311 (WL US D Nev Dist Ct 2014).

⁹⁵ Christian (n 79) 502.

⁹⁶ *Progressive Casualty Insurance Company v Jackie Delaney* (n 94) Sec 13.

⁹⁷ *Bridgestone America's Inc v International Business Machines Corp* (United States District Court Middle District of Tennessee Nashville Division) Decision 22 July 2014, 2014 WL 4923014, 172 F Supp (3d) 1007.

Although the defendant did protest, the court regarded the case as a matter of efficiency and approved the requested change from manual review to TAR.

- 70 In *Hyles v New York City*,⁹⁸ the main issue was whether the defendant, on the plaintiff's request, can be forced to use TAR when the defendant preferred to use keyword searching. The court held that the plaintiff (Hyles) 'absolutely is correct in general, TAR is cheaper, more efficient and superior to keyword searching' and referred to previous decisions taken by the court in similar issues, including the decision in *Da Silva Moore*. The court also agreed with the plaintiff's view on parties' obligation to cooperate in discovery, but neither the requesting party nor the court had 'the power to force cooperation or to force the responding party to use TAR'. When citing Principle 6 of the Sedona Principles, the court found the requested party to be in the best position to decide on the choice of method for review of the documents. While the requesting party may at a later stage demonstrate deficiencies in the production of evidence, at this early stage the requested party may choose the method he found appropriate.
- 71 The requested party's discretion in choosing the method for documentary review was a key factor in *Livingston v the City of Chicago*.⁹⁹ In that case, the requested party (the City of Chicago) wanted to use TAR. According to the plaintiff, the City of Chicago could not do so because use of TAR would violate a previous court order. The court, however, emphasized that a previous order assumed the use of keyword searches, but had not ordered the use of such a method. Since the plaintiffs had not brought forward any compelling reasons for denying TAR, the City of Chicago was free to use that technology.
- 72 The High Court of Ireland dealt with TAR in *Irish Bank Resolution Corp Ltd v Sean Quinn*.¹⁰⁰ The plaintiffs were seeking the court's approval for use of TAR.¹⁰¹ The rules did not require manual review, and the supreme court was competent to develop rules which are equitable and effective.¹⁰² TAR was regarded at least as accurate as manual review and definitely more effective.¹⁰³
- 73 In England and Wales, TAR has at least been subject for two court decisions. First, the High Court of England and Wales decided *Pyrrho Investments Ltd v MWB Property*.¹⁰⁴

⁹⁸ *Pauline Hyles v New York City et al.* (US District Court Southern District of New York) Opinion 1 August 2016, 10 Civ. 3119 (AT)(AJP).

⁹⁹ *Jennifer Livingston et al v The City of Chicago* (US District Court Northern District of Illinois) Opinion 3 September 2020, 16 CV 10156.

¹⁰⁰ *Irish Bank Resolution Corp Ltd and others v Sean Quinn & Others* (High Court of Ireland) Judgment 3 March 2015, [2015] IEHC 175.

¹⁰¹ *Ibid* Sec 2.

¹⁰² *Ibid* Sec 65.

¹⁰³ *Ibid* Sec 66.

¹⁰⁴ *Pyrrho Investments Ltd v MWB Property* (the High Court of Justice, UK) Judgment 16 February 2016, [2016] EWHC 256 (Ch).

The parties agreed on the use of TAR, but the judge still gave a decision on the matter.¹⁰⁵ The judge listed a number of factors in favour of applying TAR in the present case, including the experiences from other common law jurisdictions:¹⁰⁶

(2) There is no evidence to show that the use of predictive coding software leads to less accurate disclosure being given than, say, manual review alone or keyword searches and manual review combined, and indeed there is some evidence (referred to in the US and Irish cases to which I referred above) to the contrary.

(3) Moreover, there will be greater consistency in using the computer to apply the approach of a senior lawyer towards the initial sample (as refined) to the whole document set, than in using dozens, perhaps hundreds, of lower-grade fee-earners, each seeking independently to apply the relevant criteria in relation to individual documents.

(4) There is nothing in the [CPR](#) or Practice Directions to prohibit the use of such software.

(5) The number of electronic documents which must be considered for relevance and possible disclosure in the present case is huge, over 3 million.

(6) The cost of manually searching these documents would be enormous, amounting to several million pounds at least. In my judgment, therefore, a full manual review of each document would be “unreasonable” within paragraph 25 of Practice Direction B to [Part 31](#), at least where a suitable automated alternative exists at lower cost.

(7) The costs of using predictive coding software would depend on various factors, including importantly whether the number of documents is reduced by keyword searches, but the estimates given in this case vary between £181,988 plus monthly hosting costs of £15,717, to £469,049 plus monthly hosting costs of £20,820. This is obviously far less expensive than the full manual alternative, though of course there may be additional costs if manual reviews still need to be carried out when the software has done its best.

(8) The value of the claims made in this litigation is in the tens of millions of pounds. In my judgment the estimated costs of using the software are proportionate.

¹⁰⁵ It is worth noting that the High Court considered the guidelines given by Matthews as useful, see *Triumph Controls UK Ltd v Primus International* (n 80) Sec 18.

¹⁰⁶ *Pyrrho Investments Ltd v MWB Property* (n 104) Sec 33.

(9) The trial in the present case is not until June 2017, so there would be plenty of time to consider other disclosure methods if for any reason the predictive software route turned out to be unsatisfactory.

(10) The parties have agreed on the use of the software, and also how to use it, subject only to the approval of the Court.

- 74 Since the court found no factors of any weight pointing in the opposite direction, the court approved the use of TAR. Later, the High Court of England and Wales decided *Triumph Controls UK Ltd v Primus International* concerning a claim for some USD 65 million for breaches of warranty following the sale of the defendant's aerospace business. In December 2017, the defendant sought wide-ranging orders arising out of deficiencies in the claimant's disclosure:

In consequence, the defendants sought two more focused orders from the court. The first was an order that the list of 860,000 folders and file paths which had been identified by the claimants on the Farnborough shared drive should be provided to the defendants so that they could see whether there were any folders or file paths which had not yet been – but should be – searched. The second was for an order that the claimants undertake a manual review of the balance of 220,000 documents (out of a total of 450,000) which had been identified as potentially disclosable following the keyword search but which, other than a very limited sampling exercise, had not been further searched. (Sec 3)

- 75 The parties had agreed on which keywords to use for disclosure, and the documents should be manually reviewed.¹⁰⁷ The original keywords gave approximately 450,000 responsive documents. The served lists only contained at first 230,000 documents and later 4,163 additional documents in a supplemental list.¹⁰⁸ The claimants had unilaterally decided not to review 220,000 documents which they said to have been exercised 1 % of by help of TAR. The court found that the claimants provided a sensible and proportionate method concerning the folders and file paths.¹⁰⁹ However, the court found that the method concerning the documents could not stand the test:

First, what they did is not what they said they would do in the EDQ, which promised a manual review of all documents responsive to the keyword searches. Neither is what they did at all clear from their Disclosure List. (sec 27)

There is a further point about the number of people involved in the CAR process. The evidence suggested that there were perhaps ten paralegals and four associates involved in the searches. It is not apparent that there was any overseeing senior

¹⁰⁷ *Triumph Controls UK Ltd v Primus International* (n 80) Sec 6-7.

¹⁰⁸ *Triumph Controls UK Ltd v Primus International* (n 80) Sec 8-9.

¹⁰⁹ *Triumph Controls UK Ltd v Primus International* (n 80) Sec 21.

lawyer, and certainly not one undertaking the role advocated in *Pyrrho*. So whilst the recommendation in that case may be regarded as a counsel of perfection, I think that Mr Pepperall is right to say that the sheer volume of those involved with the CAR system in this case may mean that it has not been “educated” as well as it might have been, particularly in respect of the criteria for relevance. (sec 30)

- 76 Based on all circumstances, the court agreed that both the TAR exercise and the sampling was not transparent and not independently verifiable.¹¹⁰ Thereafter, the court concluded that requesting access to the additional 230,000 documents was not unreasonable or disproportionate. The court ordered that some sort of manual review had to be taken.
- 77 In Canada, a judgment on TAR was taken by the Competition Tribunal in *The Commissioner of Competition v Live Nation Entertainment Inc et al.*¹¹¹ The commission asked for further production of documents after the defendant used TAR to locate relevant evidence. Initially, the document collection was of 2.5 million documents and the counsel reviewed about 8,287 sample documents which were used to train the computer. The parties did not disagree with the use of TAR, and the tribunal encouraged ‘the use of modern tools to assist in these document-heavy cases where they are as or more effective and efficient than the usual method of document collection and review.’¹¹²
- 78 During the last 15 years, courts from all over the common law world have accepted and encouraged the use of TAR for e-disclosure or e-discovery. Regardless of the potential differences between the common law jurisdictions on choices between TAR and manual review, certain tendencies may be suggested: In general, courts acknowledge the benefits of TAR both for its effectivity and its ability to single out relevant and non-privileged information and documents. However, the decision between TAR and manual review must be taken in each case. That decision is always goal-oriented and pragmatic, which means that the method which optimizes the goals of truth best and efficiency is preferred. Even though accuracy and efficiency will be key aspects of the court’s decision, the court normally pays much attention to the parties’ agreements or disagreements. If the parties agree on using or not using TAR, the court will normally accept that. Furthermore, a prior agreement or court order should be followed up. If a party unilaterally changes from manual review to TAR, or the other way around, the court is very reluctant to accept that if the change is not in line with a previous agreement or a court order. However, the requested party has discretion concerning the choice methodology which prevails unless otherwise is agreed between the parties or follows from a court order. While the court has competence to order the choice of

¹¹⁰ *Triumph Controls UK Ltd v Primus International* (n 80) Sec 31.

¹¹¹ *The Commissioner of Competition v Live Nation Entertainment Inc et al* (Canada’s Competition Tribunal) Decision 1 October 2018, [2018] CACT 17.

¹¹² *Ibid* Sec 15.

review methodology, at least so far, the courts have been reluctant to use that competence.¹¹³ Both in its decision on whether to apply TAR and the details, the court assumes and expects the parties to cooperate. The court also expects the review to become transparent. The application of TAR is far from flawless, and sanctions should be invoked if a party does not disclose all relevant and non-privileged documents.¹¹⁴

4.3.3 TAR Outside the Common Law Jurisdictions?

- 79 While TAR has become crucial for e-discovery and e-disclosure processes in common law jurisdictions, it is uncertain whether or to what extent TAR, a similar use of machine learning or another AI technique, could be applied in jurisdictions outside the common law family. Even though the legal framework of discovery or disclosure is more or less exclusive for the common law countries, problems of information overload caused by massive amounts of electronic documents are not unique for common law jurisdictions. One should expect that similar factual or evidential problems arise. On the contrary, one should assume that information overload is an inherent element of a global digital revolution and thereby relevant in all jurisdictions of the 21st century. One should also assume that machine learning and other forms of AI are flexible and capable of being adjusted to most procedural traditions.
- 80 However, TAR is applicable or even relevant only within legal systems which provide parties with a right to access evidence in possession of the opposite party or a third party. Systems of evidence law for civil cases may vary radically between legal families,¹¹⁵ and problems concerning access to evidence are an element of evidence law where the differences are surprisingly massive. Even though most jurisdictions acknowledge the advantages of having better access to evidence, the attitudes towards disbalances of access between parties vary extremely from one jurisdiction to another.¹¹⁶ While rules on discovery and disclosure in common law jurisdictions oblige parties to give opposite parties pre-trial access to all relevant evidence, no clear parallel exists in for instance German law.¹¹⁷ Although these matters are disputed, the prevailing

¹¹³ G Streich, 'Court Mandated Technology-Assisted Review in E-Discovery: Changes in Proportionality, Cost-Shifting, and Spoliation' (2021) 90 Fordham Law Review Online 139, 141–142.

¹¹⁴ D Dowling, 'Tarpits: The Sticky Consequences of Poorly Implementing Technology-Assisted Review' (2020) 35 Berkeley Technology Law Journal 172.

¹¹⁵ See f ex M R Damaska, *Evidence Law Adrift* (Yale UP 1997) and L Tichý (ed), *Standards of Proof in Europe* (Mohr Siebeck 2019).

¹¹⁶ G C Hazard, 'A Drafter's Reflections' *ALI/UNIDROIT Principles of Transnational Civil Procedure* (Cambridge 2006) xlix-l, *ELI/UNIDROIT Part VII Introduction comment 2*; R Verkerk, *Fact-Finding in Civil Litigation. A Comparative Perspective* (Intersentia 2010); S N Subrin, 'Discovery in Global Perspective: Are we Nuts?' (2002) 52 DePaul Law Review 299.

¹¹⁷ M Strandberg, 'Access to Evidence in US, Germany, and Norway' in R H Rhee and M Woo (ed), *Comparative Civil Procedure* (Edward Elgar 2024) forthcoming.

German view is that a general procedural duty to disclose evidence does not exist.¹¹⁸ A duty to disclose evidence may be based on substantive law, but in practice that will be of any help only if the specific parties have contractually agreed on an access to information clause. The GCCP, especially §§ 142-144, contains some provisions after which a party may be obliged to disclose evidence, but only if the opposite party have identified the evidence and requested a court order on access to that particular piece of evidence. German law entails certain potential functional equivalents which to some degree reduce or compensate for imbalances in procedural power caused by non-equal access to evidence,¹¹⁹ but these mechanisms are less formal, less developed, and more indirect effects of general procedural principles than rules on access to evidence per se. A kind of cliché view on the systems for production of evidence, is to describe the common law approach as ask your opponent to bring forward the evidence, and a civil law approach as do it yourself (perhaps with a little help from your judge).¹²⁰

- 81 Despite the extremely different attitudes taken within different legal families to the problem of access to evidence, some international legal instruments contain mechanisms sharing important features with Anglo-American discovery or disclosure. Probably, the TRIPS Agreement from 1994¹²¹ is the best example of a global agreement containing a far-reaching obligation to disclose evidence. Article 43 is a good example:

1. The judicial authorities shall have the authority, where a party has presented reasonably available evidence sufficient to support its claims and has specified evidence relevant to substantiation of its claims which lies in the control of the opposing party, to order that this evidence be produced by the opposing party, subject in appropriate cases to conditions which ensure the protection of confidential information.

2. In cases in which a party to a proceeding voluntarily and without good reason refuses access to, or otherwise does not provide necessary information within a reasonable period, or significantly impedes a procedure relating to an enforcement action, a Member may accord judicial authorities the authority to make preliminary and final determinations, affirmative or negative, on the basis of the information presented to them, including the complaint or the allegation presented by the party

¹¹⁸ P Arens, 'Zur Aufklärungspflicht der nicht beweisbelasteten Partei im Zivilprozeß' (1983) 96 Zeitschrift für Zivilprozeß 1; H Prütting, *Gegenwartsprobleme der Beweislast* (G.H. Beck 1983) 33–34, 137 ff.; G Lüke, 'Der Informationsanspruch im Zivilrecht' (1986) 25 Juristische Schulung 2; J Braun, *Lehrbuch des Zivilprozeßrechts* (Mohr Siebeck 2014) 103; Ahrens (n 23) 113–114; R Greger, *Zöller Zivilprozessordnung* (34th edn, Otto Schmidt 2022) 853; C Gomille, *Informationsproblem und Wahrheitspflicht* (Mohr Siebeck 2016) 142 ff.

¹¹⁹ P L Murray and R Stürner, *German Civil Justice* (Carolina Academic Press 2004) 239–244, 589–610.

¹²⁰ R L Marcus, 'Extremism in the Pursuit of Truth is our Virtue: The American Infatuation with Broad Discovery' in R H Rhee and A Uzelac (ed), *Truth and Efficiency in Civil Litigation* (Intersentia 2012) 165, 166.

¹²¹ WTO: Agreement on Trade-Related Aspects of Intellectual Property Rights, agreed in Marrakesh on 15th April 1994.

adversely affected by the denial of access to information, subject to providing the parties an opportunity to be heard on the allegations or evidence.

- 82 Further similarities with discovery and disclosure are found in Art 47 declaring that members ‘may’ provide that judicial authorities shall have the power to ‘order the infringer to inform the right holder of the identity of third persons involved in the production and distribution of the infringing goods or services and of their channels of distribution.’ Still, the provision most similar to discovery or disclosure is Art 50:

1. The judicial authorities shall have the authority to order prompt and effective provisional measures:

to prevent an infringement of any intellectual property right from occurring, and in particular to prevent the entry into the channels of commerce in their jurisdiction of goods, including imported goods immediately after customs clearance;

(b) to preserve relevant evidence in regard to the alleged infringement.

2. The judicial authorities shall have the authority to adopt provisional measures *inaudita altera parte* where appropriate, in particular where any delay is likely to cause irreparable harm to the right holder, or where there is a demonstrable risk of evidence being destroyed.

3. The judicial authorities shall have the authority to require the applicant to provide any reasonably available evidence in order to satisfy themselves with a sufficient degree of certainty that the applicant is the right holder and that the applicant's right is being infringed or that such infringement is imminent, and to order the applicant to provide a security or equivalent assurance sufficient to protect the defendant and to prevent abuse.

- 83 While TRIPS have been criticized for being too heavily influenced by US law,¹²² the contracting states are of course obliged to introduce such access to evidence for the substantive rights covered by the agreement. Within the branch of substantive law covered by TRIPS, the EU requires member states to incorporate general rules on access to evidence in accordance with the TRIPS Agreement.¹²³ These requirements are of course followed up by the EU member states.¹²⁴ Since TRIPS is a global agreement signed

¹²² D P Harris, ‘TRIPS Rebound: An Historical Analysis of How the TRIPS Agreement Can Ricochet back against the United States’ (2004) 25 *Northwestern Journal of International Law & Business* 99–164.

¹²³ Directive on the enforcement of intellectual property rights, 2004/48/EC of 29 April 2004 (EU), articles 6-8, see also preamble sections 4-7.

¹²⁴ In Germany, these rules on disclosure have been incorporated in special legislation for intellectual property rights, see *Gesetz über Urheberrecht und verwandte Schutzrechte* (UrhG) (‘Copyright and related rights act’) §§ 101 ff, *Gesetz über den Schutz von Marken und sonstigen Kennzeichen*

by 164 states world-wide, most probably technological methods such as TAR are at least relevant in all those states.

- 84 Although not at all mirroring neither US discovery nor English disclosure, both ALI/UNIDROIT Principles and ERCP provide the ground for access to evidence orders inspired by Anglo-American law. Both these soft law schemes in general oblige a party to disclose evidence which are relevant and non-privileged.¹²⁵ Most detailed are ERCP, which in Rules 101-102 set up a general right to access evidence and a set of criteria which a request must fulfil before the court may order disclosure of evidence. While ERCP have a rather broad scope of application, they are of course not binding although they express what the project members regarded as international best practice.¹²⁶ Still, whenever these rules are voluntarily prescribed either by the EU or a national legislator, challenges similar to Anglo-American discovery or disclosure will arise and so will technological solutions for situations of information overload.
- 85 At a national level, several jurisdictions contain mechanisms similar to discovery or disclosure. In Norway, for example, several sets of rules provide a right to access evidence in possession of the opposite party or a non-party. Prior to commencement, any possible future party may claim access to evidence in possession of a possible future party or any non-party, see NCCP § 28-2:

Evidence may be secured if it can be of significance in a dispute to which the applicant may become a party or intervener, and there is either a clear risk that the evidence will be lost or considerably weakened, or there are other reasons why it is particularly important to obtain access to the evidence before legal proceedings are instigated.

- 86 These rules were inspired by TRIPS Art 50 and were to some degree established in order to fulfil the obligations under that treaty. However, as the legislator decided to generalize these rules they apply to all civil cases and not only to infringements of intellectual property rights. Post commencement, any party have a right to access any admissible and tangible evidence which are relevant, sufficiently defined, and proportional.¹²⁷ Both sets of rules apply to digitally stored information.¹²⁸ Neither of these set of rules mirrors US discovery or English disclosure, but basic similarities are in place and court practice underline the practical challenges of providing access to masses of digitally stored information.¹²⁹ In practice, challenges similar to those reported from

(MarkenG) ('Law on the protection of trade marks and other signs') §§ 19 ff, *Gesetz über den rechtlichen Schutz von Design* ('Law on the legal protection of designs') §§ 46 ff, *Patentgesetz* ('Patent law') §§ 140b ff. In Norway, these rules have been incorporated in the general code of civil procedure, see NCCP ch 28 and 28-A.

¹²⁵ ALI/UNIDROIT Principles 16.1 and 16.2, ERCP Rules 100 to 110.

¹²⁶ ERCP Preamble section III.

¹²⁷ Norwegian CCP §§ 21-5, 26-5 and 26-6.

¹²⁸ Norwegian CCP § 26-1.

¹²⁹ *Felleskjøpet Agri SA (Counsel Fredrik Lilleaas Ellingsen) v. Infor (Steinhausen) II GmbH (Counsel Ola Haugen)*, No 18-186326SIV-HRET (Supreme Court, Norway) Order 27 May 2019, HR-2019-997-A.

Anglo-American discovery or disclosure are seen in Norwegian courts. Well-known difficulties are whether orders for access to massive amounts of information may be proportionately expensive compared to the substantive issues at stake, how access to evidence orders shall be technically and practically enforced, how secured evidence is to be handled, and so on.¹³⁰

- 87 Other European countries, such as the other Scandinavian countries, the Netherlands, and Belgium contain rules similar to these Norwegian rules and also for civil cases which are outside the scope of application of the TRIPS Agreement. Probably, even in these countries the rules on access to evidence open for situations of information overload and problems which may be solved by TAR or similar technological innovations. Such techniques may become even more relevant in Europe in the near future. That is due to the ongoing digital revolution, but also to suggested new EU law concerning liability for AI.¹³¹ The European Commission's proposed directive for non-contractual liability for AI contains a rather general and broad obligation to disclose evidence, see Art 3.1:

Member States shall ensure that national courts are empowered, either upon the request of a potential claimant who has previously asked a provider, a person subject to the obligations of a provider pursuant to [Article 24 or Article 28(1) of the AI Act] or a user to disclose relevant evidence at its disposal about a specific high-risk AI system that is suspected of having caused damage, but was refused, or a claimant, to order the disclosure of such evidence from those persons.

In support of that request, the potential claimant must present facts and evidence sufficient to support the plausibility of a claim for damages.

- 88 The obligation to disclose information is limited to what is necessary and proportionate. When regarding those criteria, the court shall take into account the need to protect trade secrets and other confidential information.¹³² If the proposed legislation is enacted, most probably massive amounts of information shall be disclosed, and TAR may obviously become a relevant method. Perhaps not as surprising as it may sound, AI based techniques will be applied in order to find out whether someone is liable for damage caused by AI.

4.4 Informal Methods of E-Evidence-Gathering (Self-Help)

- 89 The digital revolution prepared the ground for a rich variety of new non-formal methods of evidence-gathering. One such technique is the every-day possibility of recording or filming; a dash-cam could in detail prove the course of events leading to an accident, a

¹³⁰ Hjort (n 39); M Strandberg, 'Bevistilgang og rollefordeling' in H Andersson, E Bylander and H Bellander (ed), *Processrättsliga studier tillägnade Bengt Lindell* (Iustus 2021) 277.

¹³¹ Proposal for a Directive on adapting non-contractual civil liability rules to artificial intelligence (AI Liability Directive), COM(2022) 496.

¹³² Proposed AI Liability Directive (n 131) Art 3.4.

film taken from a drone may in detail prove how a landscape changed after illegal pollution by a local manufacturer, an audio recording taken by an iPhone may in detail prove the promises made by a seller. In sharp contrast to the state of affairs 25-30 years ago, nowadays internet searches are commonly used for evidence-gathering in all sorts of litigation world-wide. A party may search for general information on his opponent, a tortfeasor who allegedly suffered damage from a product malfunction may look for information on the construction of products or the advertisement for it, an insurance company which suspects that a customer did start fire on his own property may search online for information on what that person did on a particular time, a party claiming damages from a municipality for irregular entering a contract to one of his competitors may search for information on Facebook or LinkedIn to show that a key person in the municipality was a personal friend of the director or the main owner of the competitor, or a party may search on such sites in order to show that a witness person's social network (who knows who etc) for instance by using for use in an argumentation for declining the unwillingness of a witness.

- 90 These mechanisms are more or less globally relevant. Unless a jurisdiction should take the implausible position of denying internet searches or films as a mean for access to information in general or for all legal proceedings, such evidence-gathering mechanisms will be effective no matter whether a jurisdiction have formal rules on access to evidence and irrespective of very many other peculiarities of the jurisdiction's procedural law. One may assume these informal mechanisms to be of greater significance in jurisdictions which do not have formal access to evidence mechanisms comparable to Anglo-American discovery or disclosure. However, such informal mechanisms are undoubtedly of significance in common law jurisdictions as well. Larger US law firms have for many years developed tactics for investigation of social media, it is standard practice for attorneys to scan such media and the question of involving external expertise has been raised.¹³³
- 91 These informal mechanisms are examples of procedural self-help, which in most parts of the world are in accordance with basic features and ideals of party control of evidence gathering and which formal access to evidence rules may be regarded as limitations of. An obvious advantage of self-help mechanisms is that a party gets access to evidence without having to provide any form of legal basis for doing so, without having to involve a judge for giving a court order, and without having to involve the opposite party. However, a party may very well need help from experts or others in order to provide effective internet searches. Just as the practical and technical possibilities for gathering online available evidence multiplied by the digital revolution, the practical and technical difficulties connected to such gathering are also of a rich and varied nature. In some cases, a party may seek evidence on the entire world wide web, in other cases the access to specific information on a private space (clouds, smartphones, etc) is the troubling matter. Litigation may also directly or indirectly be prompted by searching activities from

¹³³ C J Akin, 'How to Discover and Use Social Media-Related Evidence' (2011) 37(2) *Litigation* 32.

professional organization. A prominent example is the Human Rights Data Analysis Group (HRDAG),¹³⁴ which by combining statistical methods and internet searches have revealed massive violations of human rights in countries like the US and Mexico. Although HRDAG are not lawyers or advocates, their findings may very well support a civil lawsuit brought by victims of human rights against institutions which have been revealed as violators of such rights.

- 92 While these informal mechanisms may have the effect of better quality and quantity of the evidence for a less amount of time and money, they also come with a potentially high legal and societal cost. Even though the main rule in most jurisdictions is that internet searches, at least for publicly available information, are free and lawful, such activities may nevertheless be highly troublesome. Attached to the online society is a real risk of a privatized ‘big brother society’ and a real risk of getting non-official private investigators, detectives, or sheriffs more or less out of control. In most jurisdictions, the freedom of internet searches or other non-formal mechanisms for investigative purposes may be legally regulated by several branches of law, such as criminal law, administrative law, intellectual property law, and the recently emerged field of data protection law. Within the branch of evidence law, the freedom of internet searches could become limited by inadmissibility rules, and at least two fundamental legal issues may be called upon to restrict the possibilities of private, informal evidence-gathering:
- 93 Firstly, such forms of evidence gathering may violate a *right to privacy*. Procedural law of all European countries must be kept within ECHR Art 8, and EU member states must also keep within the EU Charter of Fundamental Rights Art 7 and 8 on the protection of personal data which has been followed up by the GDPR. In Europe, many restrictions on gathering, storing, and use of personal data have been developed in a combination of human rights law, detailed provisions, and case law both from European and national courts. Although the protection of privacy has a general scope which does not primarily or exclusively relate to gathering of evidence for use in litigation, the limitations on gathering of information will also limit a (future) party’s freedom to gather evidence. Many examples of modern (European) procedural law could be worth mentioning here, such as the German case where the BGH admitted evidence from a dash cam.¹³⁵
- 94 Secondly, informal evidence-gathering may raise the question of illegally obtained evidence. Evidence obtained by illegal hacking, surveillance, or filming is just three of very many examples which raise the question of whether such evidence shall be inadmissible because of its illegal emergence or admissible despite its illegal emergence. In deciding whether to admit illegally obtained evidence a balance must be struck between truth-seeking and fair play and involved in that balance is both a perspective on the concrete, pending case and the general, societal perspective concerning prevention of similar unlawful evidence-gathering in the future. That balance, however, is not at all uniformly

¹³⁴ Human Rights Data Analysis Group (HRDAG) <https://hrdag.org/>.

¹³⁵ Lüke (n 23) 295–296.

taken in all jurisdictions.¹³⁶ Within Europe, a tendency in several jurisdictions is that the fair play argument has been gradually more important over time.¹³⁷ That tendency has been influenced by ECtHR both by requirements set up by the court itself and by further prompted in national law.¹³⁸ While not disregarding the differences between European jurisdictions of the matter, ERCP Rule 90 establishes a main rule saying that illegally obtained evidence must be excluded. However, the rule opens up for exceptions if illegally obtained evidence ‘is the only way to establish the facts’ and it is for each jurisdiction to decide whether a concrete gathering of evidence is lawful or not.

95 The right to privacy and the problem of illegally obtained evidence are, of course, intertwined for instance because violation of a right to privacy is one of the reasons why evidence may become illegally obtained. Furthermore, both the right to privacy and rules to avoid illegally obtained evidence have seen a growing significance during the last two or three decades. Since the digital revolution has taken place during the same decades, one may wonder whether that revolution caused the (further) developments of these legal doctrines. Obviously, the development of for instance GDPR was a reaction to the digital revolution and the use and misuse of the massive opportunities of data management provided by IT. Probably, the growing de facto importance of a right to privacy has correlated to the new technical opportunities for violating that right. Arguably, the new technologies have also made the need to protect privacy more urgent also in core civil cases between private parties. While the pre-digital problems of illegal surveillance first and foremost were characteristic for state-activities especially within totalitarian states, new opportunities for gathering and collection of personal information caused by modern technology are typically made use of by massive global companies. However, the developments of these legal doctrines are of course not fully explained by the digital revolution. The right to privacy protects many other segments than collection of digital information and also non-digital evidence could of course be the result of illegal activities. Seen from a more general procedural perspective, the limitations on evidence gathering caused by the growing emergence of privacy and protection of fair play does also belong to a broader tendency of more rights-based foundationalism of modern procedural law.

¹³⁶ See B Nunner-Krautgasser and P Anzenberger, ‘Inadmissible Evidence: Illegally Obtained Evidence and the Limits of the Judicial Establishment of the Truth’ in V Rijavec, T Kerestes, T Ivanc (ed), *Dimensions of Evidence in European Civil Procedure* (Wolters Kluwer 2016) 195.

¹³⁷ For instance, the law of England and Wales after *Imerman v Tchenguiz and others* (The Court of Appeal, UK) Judgment 10 May 2010, [2010] EWCA Civ. 908; see N Andrews, *Andrews on Civil Processes* (2nd ed Intersentia 2019) 396–400.

¹³⁸ ERCP Rule 90 comment 1.

ABBREVIATIONS AND ACRONYMS

ALI	American Law Institute
Art	Article/Articles
BGH	<i>Bundesgerichtshof</i> (Federal Court of Justice) [Germany]
BGHZ	Decisions by the Bundesgerichtshof
CAR	Computer-Assisted Review
CEA	Canadian Evidence Act
cf	<i>confer</i> (compare)
ch	chapter
CJEU	Court of Justice of the European Union
ECLI	European Case Law Identifier
ECHR	European Convention on Human Rights
ECtHR	European Court of Human Rights
ed	editor/editors
edn	edition/editions
eg	<i>exempli gratia</i> (for example)
ELI	European Law Institute
ERCP	ELI/UNIDROIT Model European Rules of Civil Procedure
et al	and others
etc	et cetera
EU	European Union
EUR	Euro
EWCRP	English and Welch Civil Procedure Rules
EWHC	High Court of England and Wales
f ex	for example
ff	following
fn	footnote (external, ie, in other chapters or in citations)
FRD	Federal Rules Decisions (US)
F Supp	Federal Supplement (US)
GCCP	Code of Civil Procedure (Germany)
GDPR	General Data Protection Regulation (EU)
HRDAG	Human Rights Data Analysis Group
ICT	Information and Communication Technologies
ie	<i>id est</i> (that is)
IEHC	High Court of Ireland
n	footnote (internal, ie, within the same chapter)
NCCP	Norwegian Code of Civil Procedure
NJA	Nytt Juridisk Arkiv (Swedish Supreme court practice)

NJW	Neue Juristische Wochenschrift
no	number/numbers
NOU	Norges Offentlige Utredninger
para	paragraph/paragraphs
PD	Practice Direction
pt	part
QBD	Queen's Bench Division
QAELFIT	Act to Establish a Legal Framework for Information Technology (Quebec)
RSC Order	Rules of the Supreme Court (UK)
Rt	Norsk Retstidende (Norwegian Supreme Court decisions)
SCC	Supreme Court Canada
SPCCP	Spanish Code of Civil Procedure
SWCP	Swedish Code of Procedure
Sec	Section/Sections
supp	supplement/supplements
TAR	Technology-assisted review
trans/tr	translated, translation/translator
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UK	United Kingdom
UNCITRAL	United Nations Commission on International Trade Law
UNCITRAL MLEC	UNCITRAL Model Law on Electronic Commerce
UNIDROIT	<i>Institut international pour l'unification du droit privé</i> (International Institute for the Unification of Private Law)
UP	University Press
US / USA	United States of America
USD	United States Dollar
USFRCP	Federal Rules of Civil Procedure (US)
USFRE	Federal Rules of Evidence (US)
v	versus
vol	volume/volumes
WL	WestLaw (US)
***	***

LEGISLATION

International/Supranational

European Convention on Human Rights 1950 (Council of Europe)

Charter of Fundamental Rights of the European Union 326/2012, of 26 October 2012 (EU)

Regulation on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation), 679/2016 of 27 April 2016 (EU)

Directive on the enforcement of intellectual property rights, 2004/48/EC of 29 April 2004 (EU).

Proposal for a Directive of the European Parliament and of the Council on adapting non-contractual civil liability rules to artificial intelligence (AI Liability Directive), COM(2022) 496 (EU)

Agreement on Trade-Related Aspects of Intellectual Property Rights, 15 April 1994 (World Trade Organization).

Model Law on Electronic Commerce 1996 (UNCITRAL)

Principles of Transnational Civil Procedure 2004 (ALI/UNIDROIT)

Model European Rules of Civil Procedure 2020 (ERCP)

National

Act to Establish a Legal Framework for Information Technology, C-1.1 2001/32 (Quebec/Canada)

Canada Evidence Act, R.S.C. 1985 c. C-5, (Canada)

Civil Procedure Rules of England and Wales 1998 (England and Wales)

English and Welsh Practice Direction 31B – Disclosure of Electronic Documents, see https://www.justice.gov.uk/courts/procedure-rules/civil/rules/part31/pd_part31b

Gesetz über Rahmenbedingungen für elektronische Signaturen (Signaturgesetz), Act of 1st July 2016 (Germany)

Gesetz über Urheberrecht und verwandte Schutzrechte (Urheberrechtsgesetz), Act 9 September 1965 (Germany)

Gesetz über den Schutz von Marken und sonstigen Kennzeichen (Markengesetz), Act 25 October 1994 (Germany)

Gesetz über den rechtlichen Schutz von Design (Designgesetz), Act of 12 March 2004

Ley de Enjuiciamiento Civil (Code of Civil Procedure), Law 1/2000 of 7 January (Spain)

Lov om mekling og rettergang i sivile tvister (tvisteloven) (Code of Civil Procedure), 17 June 2005 no 90 (Norway)

Lov om Rettergangsmåten for tvistemål (tvistemålsloven), 13 August 1915 no 6 repealed from 2008, (Norway)

Patentgesetz, Act 5 May 1935 (Germany)

Rättegångsbalken (Code of Procedure), Act no 740 of 18 July 1942 (Sweden)

Sedona Canada Principles Addressing Electronic Discovery, (2022) 23 The Sedona Conference Journal 160–329, available at The Sedona Conference® .

United States Federal Rules of Evidence, 20 November 1972 (US)

United States Federal Rules of Civil Procedure, 20 December 1937 (US)

Zivilprozessordnung (Code of Civil Procedure), of 30 January 1877 (Germany)

CASES

National

Case VI ZR 233/17 (BGH, Germany) Judgment 15 May 2018 [ECLI:DE:BGH:2018:150518UVIZR233.17.0] [NJW 2018, 2883].

Bridgestone America's Inc v International Business Machines Corp (United States District Court Middle District of Tennessee Nashville Division) Decision 22 July 2014, 2014 WL 4923014, 172 F Supp (3d) 1007.

The Commissioner of Competition v Live Nation Entertainment Inc et al (Canada's Competition Tribunal) Decision 1 October 2018, [2018] CACT 17.

Da Silva Moore and others v Publicis Groupe (US District Court Southern District of New York) Order 24 February 2012, 287 FRD 182 S.D.N.Y. 2012.

Da Silva Moore and others v Publicis Groupe [Appeal] (US District Court Southern District of New York) Opinion and Order on 25 April 2012, No 11 Civ. 1279 (ALC) (AJP).

Irish Bank Resolution Corp lmt and others v Sean Quinn & Others (High Court of Ireland) Judgment 3 March 2015, [2015] IEHC 175.

Jennifer Livingston et al v The City of Chicago (US District Court Northern District of Illinois) Opinion 3 September 2020, 16 CV 10156.

Pauline Hyles v New York City et al. (US District Court Southern District of New York) Opinion 1 August 2016, 10 Civ. 3119 (AT)(AJP).

Progressive Casualty Insurance Company v Jackie Delaney (US District Court District of Nevada) Opinion and Order 13 November 2014, WL 12785311 (WL US D Nev Dist Ct 2014).

Pyrrho Investments lmt v MWB Property (the High Court of Justice, UK) Judgment 16 February 2016, [2016] EWHC 256 (Ch).

Triumph Controls UK lmt v Primus International (Technology and Construction Court, UK) Judgment 7 February 2018, [2018] EWHC 176 (TCC).

Imerman v Tchenguiz and others (The Court of Appeal, UK) Judgment 10 May 2010, [2010] EWCA Civ. 908.

R. G. AB v Securitas Teknik AB (Supreme Court of Sweden) Decision 17 December 1998, [NJA 1998, 829].

Idre Fjällrestauranger v Stiftelsen Idre Fjäll (Supreme Court, Sweden) Decision 2 April 2020 [NJA 2020, 373].

Felleskjøpet Agri SA (Counsel Fredrik Lilleaas Ellingsen) v. Infor (Steinhausen) II GmbH (Counsel Ola Haugen), No 18-186326SIV-HRET (Supreme Court, Norway) Order 27 May 2019, HR-2019-997-A.

Normarc, No 2006/90 (Supreme Court, Norway) Decision 23 May 2006 (Rt 2006), HR-2006-00867-A.

BIBLIOGRAPHY

- Ahrens H J, *Der Beweis im Zivilprozess* (Otto Schmidt Verlag 2015).
- Ahrens H J, 'Dash-cam-Aufzeichnungen als Beweismittel nach Verkehrsunfällen' (2018) 39 NJW, 2837.
- Akin C J, 'How to Discover and Use Social Media-Related Evidence' (2011) 37(2) Litigation 32.
- Andrews N, *Andrews on Civil Processes* (2nd ed Intersentia 2019).
- Arens P, 'Zur Aufklärungspflicht der nicht beweisbelasteten Partei im Zivilprozeß' (1983) 96 Zeitschrift für Zivilprozeß 1.
- Braun J, *Lehrbuch des Zivilprozeßrechts* (Mohr Siebeck 2014).
- Christian G, 'Predictive Coding: Adopting and Adapting Artificial Intelligence in Civil Litigation' (2019) 97 The Canadian Bar Review 486.
- Clark S and Jackson R, *The Reform of Civil Justice* (2nd edn, Sweet and Maxwell 2018).
- Damaska M R, *The Faces of Justice and State Authority. A Comparative Approach to the Legal Process* (Yale UP 1986).
- Damaska M R, *Evidence Law Adrift* (Yale UP 1997).
- Dennis I, *The Law of Evidence* (6th edn, Sweet & Maxwell 2017).
- Deppenkemper G, *Beweiswürdigung als Mittel prozessualer Wahrheitserkenntnis. Eine dogmengeschichtliche Studie zu Freiheit, Grenzen und revisionsgerichtlicher Kontrolle tatrichterlicher Überzeugungsbildung (§ 261 StPO, § 286 ZPO)* (V&R Press 2004).
- Dodson S, 'Cooperativism in the American Adversarial Tradition' (2021) 40 *Civil Justice Quarterly* 283.
- Dowling D, 'Tarpits: The Sticky Consequences of Poorly Implementing Technology-Assisted Review' (2020) 35 Berkeley Technology Law Journal 172.
- Ekelöf P O and Boman R, *Rättegång IV* (6th edn, Norstedt Juridik 1992).
- Ekelöf P O, Edelstam H and Heuman L, *Rättegång IV* (7th edn, Norstedts Juridik 2009).
- Fredriksen H H and Strandberg M, 'Is E-justice Reform of Norwegian Civil Procedure Finally Happening?' (2016) 3(2) Oslo Law Review 72.
- Greger R, *Zöller Zivilprozessordnung* (34th edn, Otto Schmidt 2022).
- Gomard B and Kistrup M, *Civilprocessen* (7th edn, Karnov Group 2013).
- Gomille C, *Informationsproblem und Wahrheitspflicht* (Mohr Siebeck 2016).

Grossman M R and Cormack G V, 'Technology-Assisted Review in E-Discovery Can Be More Effective and More Efficient Than Exhaustive Manual Review' (2011) 2(3) Richmond Journal of Law and Technology 1.

Harris D P, 'TRIPS Rebound: An Historical Analysis of How the TRIPS Agreement Can Ricochet back against the United States' (2004) 25 Northwestern Journal of International Law & Business 99.

Hazard G C, 'From Whom No Secrets Are Hid' (1998) 76 Texas Law Review 1665.

Hazard G C, 'Discovery and the Role of the Judge in Civil Law Jurisdictions' (1998) 73 Nortre Dame Law Review 1017.

Hazard G C, 'A Drafter's Reflections', *ALI/UNIDROIT Principles of Transnational Civil Procedure* (Cambridge 2006) xlix-l.

Hjort M A, *Tilgang til bevis i sivile saker* (Universitetsforlaget 2016).

Ivanc T, 'Theoretical Background of Using Information Technology' in V Rijavec, T Kerestes and T Ivanc (ed), *Dimensions of Evidence in European Civil Procedure* (Wolters Kluwer 2016) 265.

Jackson R, *Review of Civil Litigation Costs: Final Report* (The Stationery Office 2009).

Jeuland E, 'The Standard of Proof in France' in L Tichý (ed), *Standard of Proof in Europe* (Mohr Siebeck 2019) 183.

Langbein J H, *Torture and the Law of Proof. Europe and England in the Ancient Régime* (The University of Chicago Press 1976/2006).

Langbein J H, 'The Demise of Trial in American Civil Procedure: How It Happened, Is It Convergent with European Civil Procedure?' in R H Rhee and A Uzelac (ed), *Truth and Efficiency in Civil Litigation. Fundamental Aspects of Fact-finding and Evidence-taking in a Comparative Context* (Intersentia 2012) 119.

Lücke G, 'Der Informationsanspruch im Zivilrecht' (1986) 25 Juristische Schulung 2.

Lücke W, *Zivilprozessrecht I* (11th edn, C.H. Beck 2020).

Marcus R, 'Extremism in the Pursuit of Truth is our Virtue: The American Infatuation with Broad Discovery' in R H Rhee and A Uzelac (ed), *Truth and Efficiency in Civil Litigation* (Intersentia 2012) 165.

Marcus R, 'Cooperation and Litigation: Thoughts on the American Experience' (2013) 65 Kansas Law Review 821.

Marcus R, 'Looking Backward to 1938' (2014) 162 University of Pennsylvania Law Review 1691.

Marcus R, Redish M H, Sherman E F and Pfander J E, *Civil Procedure A Modern Approach* (7th edn, West Publishing 2018).

Mason S, 'Introduction' in S Mason (ed), *International Electronic Evidence* (British Institute of International and Comparative Law, London 2008).

Mason S and Stanfield A, 'Authenticating electronic evidence' in S Mason and Seng (ed), *Electronic Evidence* (4th edn, Institute of Advanced Legal Studies 2017) 195.

Murray P L and Stürner R, *German Civil Justice* (Carolina Academic Press 2004).

Nunner-Krautgasser B and Anzenberger P, 'Inadmissible Evidence: Illegally Obtained Evidence and the Limits of the Judicial Establishment of the Truth' in V Rijavec, T Kerestes, T Ivanc (ed), *Dimensions of Evidence in European Civil Procedure* (Wolters Kluwer 2016) 195.

Peck A, 'Search Forward: Will Manual Document Review and Keyword Searches be Replaced by Computer Assisted Coding?', (2011) New Jersey Law Journal.

Pihlajamäki H, *Evidence, crime and the legal profession: the emergence of free evaluation of evidence in the Finnish nineteenth-century criminal procedure* (Lund 1997).

Prütting H, *Gegenwartsprobleme der Beweislast* (G.H. Beck 1983).

Roitblat H T et al, 'Document Categorization in Legal Electronic Discovery: Computer Classification vs. Manual Review' (2010) 61(1) Journal of American Society Information Science & Tech 70.

Rosenberg M, 'Federal Rules of Civil Procedure in Action: Assessing Their Impact' (1989) 137 U. Pa. Law Review 2197, 2198.

Schei T et al, *Tvisteloven kommentarutgave* (2nd edn, Universitetsforlaget 2013).

Silvestri E, 'The Antique Shop of Italian Civil Procedure: Oath and Confession as Evidence' in C H Rhee A Uzelac (ed), *Truth and Efficiency in Civil Litigation* (Intersentia 2012) 47.

Silvestri E, 'Evidence in Civil Law – Italy' Department of Law University of Pavia, 10 https://pf.um.si/site/assets/files/3223/evidence_in_civil_law_-_italy.pdf.

Sladic J and Uzelac A, 'Assessment of evidence' in V Rijaved, T Kerestes and T Ivanc (ed), *Dimensions of European Civil Procedure* (Wolters Kluwer 2016) 107.

Sorabji J, *English Civil Justice after the Woolf and Jackson Reforms. A Critical Analysis* (Cambridge UP 2014).

Sorabji J, 'Compliance Problems and Digitizing Case Management in England and Wales' in R Assy and A Higgins (ed), *Principles, Procedure, and Justice. Essays in Honour of Adrian Zuckerman* (Oxford UP 2020) 153.

Stein A, *Foundations of Evidence Law* (Oxford UP 2005).

Strandberg M, 'Standards of Evidence in Scandinavia' in L Tichy (ed), *Standard of Proof in Europe* (Mohr Siebeck 2019) 135.

Strandberg M, 'Bevistilgang og rollefordeling' in H Andersson, E Bylander and H Bellander (ed), *Processrättsliga studier tillägnade Bengt Lindell* (Lustus 2021) 277.

Strandberg M, 'Access to Evidence in US, Germany, and Norway' in R H Rhee and M Woo (ed), *Comparative Civil Procedure* (Edward Elgar 2024) forthcoming.

Streich G, 'Court Mandated Technology-Assisted Review in E-Discovery: Changes in Proportionality, Cost-Shifting, and Spoliation' (2021) 90 *Fordham Law Review Online* 139.

Subrin S N, 'Fishing Expeditions Allowed: The Historical Background of the 1938 Federal Discovery Rules' (1998) 39 *Boston College Law Review* 691.

Subrin S N, 'Discovery in Global Perspective: Are we Nuts?' (2002) 52 *DePaul Law Review* 299.

Tichý L (ed), *Standards of Proof in Europe* (Mohr Siebeck 2019).

Twining W, *Theories of Evidence: Bentham and Wigmore* (Stanford UP 1985).

Twining W, *Rethinking Evidence. Exploratory Essays* (2nd edn, Cambridge UP 2006).

Van Rhee C H and Uzelac A, 'The Pursuit of Truth in Contemporary Civil Procedure: Revival of Accuracy or a New Balance in Favour of Effectiveness?' in C H van Rhee and A Uzelac (ed), *Truth and Efficiency in Civil Litigation* (Intersentia 2012) 3.

Verkerk R, *Fact-Finding in Civil Litigation. A Comparative Perspective* (Intersentia 2010).

Vos G and Sorabji J, 'Digital Technology and the Development of Holistic Dispute Resolution' in X Kramer et al (ed), *Delivering Justice. A Holistic and Multidisciplinary Approach. Liber Amoricum in Honour of Christopher Hodges* (Hart Publishing 2022) 247.

Wagner P P, 'Das elektronische Dokument im Zivilprozess' (2016) 50 *Juristische Schulung* 29.

Westberg P, *Anskaffning av bevisning i dispositiva tvistemål* (Nordstedts Juridik 2010).

Westberg P, *Civilrättskipning* (2nd edn, Norstedt Juridik 2013).

Whitman J Q, *The Origins of Reasonable Doubt. Theleological Roots of the Criminal Trial* (Yale UP 2008).

Woolf H, *Access to Justice: Interim Report to the Lord Chancellor on the Civil Justice System in England and Wales* (HMSO 1995).

Woolf H, *Access to Justice: Final Report to the Lord Chancellor on the Civil Justice System in England and Wales* (HMSO 1996).

Zuckerman A and Cranston R (ed), *Reform of Civil Procedure* (Oxford UP 1995).

Zuckerman A, *Zuckerman on Civil Procedure. Principles and Practice* (2nd edn, Thomson 2003).