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Digital Justice through AI in Family (Patrimonial) Law, and Beyond

Editorial

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There are few who would deny that we are in the midst of a technological revolution. As computing power and prowess continue to increase, there is hardly a discipline that has escaped technologisation – and law, as the EJLT will attest, is no exception. The study and practice of law have evolved dramatically over the last century; first through rudimentary digitalisation during the early days of the computer, then through the impact of the internet, and currently through the integration of artificial intelligence (AI). Examples of how AI is integrated into law include 'smart' search engines, document analysis, automated document filling, legal outcome predictors and risk calculators, to name a few applications. This digital transformation of both judicial and extrajudicial services is enhancing access to justice by accelerating procedures, reducing costs, increasing access to information, and eliminating physical barriers to legal support as well as obtaining data-driven insights.

This EJLT Special Section spotlights one domain of law – namely, family (patrimonial) law – where technology, digitalisation and the use of AI can have a transformative

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impact.[1] Although the focus is on family (patrimonial) law, the discussion herein often extends beyond this domain to the field of law as a whole. This Special Section is inspired by three EU-projects on *Conflict Resolution with Equitative Algorithms* (CREA 2017–2019,[2] CREA2 2022–24[3] and CREA3 2024–2026[4]) that advance developments in algorithmic asset division between divorcing couples or beneficiaries of an inheritance in the European context. These three CREA projects are inter-European, interdisciplinary consortium projects, involving scholars and practitioners from law, policy, engineering and software development. This interdisciplinary approach enables a prismatic view on the topic of division of assets, the development of tools in this field and the issues at hand. We, as guest editors of this Special Section, are involved in one or more CREA projects as project coordinators and/or postdoctoral researchers.

The original CREA project was conceived as part of the growing body of dispute resolution or negotiation support system tools for parties engaged in settlement negotiations concerning the division of assets after divorce, separation or death. These tools were developed using algorithms based on principles of game theory with the aim of securing 'win–win' outcomes. Briefly, each party is asked to rank the available assets in order of preference, and these rankings are then fed to an algorithm that reads, analyses and produces a proposed division of assets based on the parties' stated preferences. Although such tools were available in other, mainly common law jurisdictions, European (mainly civil law) jurisdictions lagged behind. This is partly due to the combined complexities of multiple national legal systems, disparities between those national systems, and high levels of mobility within the European Union (EU) geographic region. The CREA approach tackled this by establishing a 'European Common Ground of Available Rights' (ECGAR), i.e. putting aside all the mandatory rules of each EU Member State and operating on the remaining 'rights available'. This innovative theoretical approach allows for a broader application of the CREA tool, in both national and cross-border matters, thereby filling the innovation gap within the EU.

While the original CREA project established proof-of-concept, CREA2 developed the tool, incorporating cutting-edge innovations in machine learning, blockchain and generative AI, to create a personalised and user-friendly tool for asset division. This Special Section not only marks the culmination of CREA2, but also the inauguration of CREA3, which continues to refine the CREA2 tool further (*infra* Epilogue). We

[1] For a succinct history and overview of these developments see: N. Hyder-Rahman, E. Alofs and M. Giacalone, 'Artificial intelligence and family law: artificial intelligence and algorithms in Family (patrimonial) law' in R. Fretwell Wilson and J. Carbone (eds.), *International Survey of Family Law 2023,* Cambridge, Intersentia, 2023, 355−383.

[2] European project co-funded by the Justice Programme 2014–2020, Call: JUST-AG-2016-05, under grant agreement no. 766463.

[3] European project co-funded by the Justice Programme 2021–2027, Call: JUST-2021-EJUSTICE, under grant agreement no. 101046629.

[4] European project co-funded by the Justice Programme 2021–2027, Call: JUST-2023-JACC-EJUSTICE, under grant agreement no. 101160564.

endeavour to capture the rich theoretical, technical and empirical lessons learned during CREA2 and frame the forward-looking ambitions of CREA3. Moreover, with digitalisation and generative AI now at the centre of legal transformation debates, innovations in the (highly personal and often sensitive) field of family law highlight the importance of continuously and rigorously assessing the opportunities and limits of computational legal tools – particularly in relation to access to justice, human oversight, and regulatory coherence. Events such as the CREA2 conference and this Special Section are part of that assessment.

The successful completion of CREA2 offered an ideal opportunity to share, discuss and celebrate the results, as well as to reflect on the current state of play in digitalisation (in its broadest sense, encompassing AI) and law with legal scholars and practitioners active in the field from around the world. These intentions came together at the CREA 2 project's final conference, held in Brussels on 23–24 May 2024. Over two days of panel presentations and discussions, conference participants engaged with digitalisation of law and legal procedures in family (patrimonial) law and beyond, both now and in the near future. What advantages might AI bring to law, particularly for increasing access to justice, in terms of cost, ease and efficiency? At the same time, what novel challenges are posed by AI as legal journeys and narratives move online?

Given the domain specificity of CREA2, namely family (patrimonial) law, developments within this field were particularly emphasised. Notwithstanding this, developments and parallels with other legal domains were welcomed.

The first panel of the conference was dedicated to sharing the results and experiences of the CREA2 project from legal (specifically, family law) and technical perspectives, as well as the applicability of these results in other legal domains. The second panel focused on developments in generative AI and law, critically engaging with the legal and ethical debates about the use of large language models (LLMs) in law, particularly in family law. The third panel centred on specific developments in AI in family law: asset division, online marriage and divorce, and alternative/online dispute resolution. The final panel examined contemporary issues in AI and law from academic and public engagement perspectives.

This Special Section draws together a selection of the papers presented at the CREA2 final conference. Together, these contributions illustrate the central ethical-legal principles of CREA2 and CREA3: that technological innovation in law must be grounded in rigorous normative analysis, procedural fairness, and empirical evaluation. Gathering insights from law, computer science, ethics, and regulatory policy, this Special Section advances a multidimensional understanding of how digital tools can– and should – serve justice.

Opening the Special Section, the first two papers concentrate specifically on the domain of family (patrimonial) law. In the first paper, **Marco Giacalone, Nishat Hyder-Rahman, Mattia Fonisto and Flora Amato** explore how generative AI, and LLMs in particular, can enhance access to justice in the field of division of assets. Drawing on

the completed CREA2 project, creating an online platform for out-of-court asset division, and its follow-up CREA3, the authors illustrate how AI can be effectively integrated into dispute resolution services. Combining legal and technical expertise, the authors analyse both the rationale and methods for implementing LLMs in legal practice, positioning their work within broader interdisciplinary debates on AI-driven justice tools. They examine access to justice in the context of human rights and call attention to the guardrails needed to ensure that advanced digital systems remain transparent, fair and user-centric.

In the second paper, **Naivi Chikoc Barreda** explores how digitalisation challenges the cross-border recognition of international marriages and divorces concluded online before a remote authority. As digitally solemnised marriages become more common, the traditional reliance on the *lex loci celebrationis* for determining the formal validity of marriages is put under pressure: the 'place' of celebration is no longer clear-cut when parties appear remotely from a different jurisdiction. Similarly, in the context of 'de-judicialisation' and digitisation of remote divorces, new questions arise regarding authenticity and the international competence of notaries. The author adopts a comparative perspective to analyse how different legal systems respond to these developments and suggests ways to improve the cross-border circulation of family status established through remote e-marriages and e-divorces.

In the third article, the focus shifts from family (patrimonial) law towards the rights of victims of crime. **Giampiero Lupo and Giada Pacifico** explore how emerging ICT and AI technologies can be harnessed to enhance the rights of crime victims, facilitate their access to justice, and prevent secondary victimisation. The authors underscore the potential of AI technology to modernise and streamline procedures, thereby supporting the implementation of the principles and rights enshrined in the EU Victims' Rights Directive (2012/29/EU) across the Union, while also drawing attention to the persistent disparities in victim support among EU Member States. In response, they propose a blueprint for DIANA — a digital information system designed to assist victims throughout their judicial and extra-judicial journeys. By integrating functionalities such as risk assessment, procedural accommodations and AI-based guidance, DIANA aims to ensure more effective, consistent and accessible support for victims in line with the EU Victims' Rights Directive.

As mentioned before, the increasing integration of technology AI into justice systems across the EU holds significant promise for enhancing the efficiency, consistency and accessibility of judicial proceedings. However, the development of AI-driven tools in this context raises complex legal and ethical questions. In particular, access to judicial decisions — essential data inputs for such tools — raises concerns about the processing of personal data contained within these decisions. In the fourth article, drawing on the experience of the CREA2 project, **Lana K. Gotvan, Daša Tičar and Katarina Zajc** reflect on the tension between innovation and data protection, illustrating the legal and practical challenges involved in building AI technologies designed to support judicial reasoning. The authors examine the European data protection framework, focusing on key principles of the General Data Protection

Regulation (GDPR), and discuss the role of anonymisation and pseudonymisation in safeguarding privacy. They further analyse how these issues play out in practice, using the data collection phase of the CREA2 project in Slovenia as a case study, and conclude by considering future directions for the responsible use of AI in the justice sector.

In the fifth article, **Gioia Arnone and Marco Giacalone** explore the evolving legal challenges posed by the rise of digital assets and the metaverse, driven by blockchain and other advanced technologies. They analyse the gaps and complexities in current legal frameworks concerning ownership, contractual obligations and governance. Furthermore, as blockchain technologies facilitate decentralised transactions and ownership, the authors examine the intricate issues surrounding security, intellectual property rights and jurisdiction in the digital realm, areas where traditional legal structures often struggle to keep pace with rapid technological innovation. They assess the potential of blockchain-based tools, such as decentralised arbitration and smart contracts, to enhance dispute resolution by offering greater efficiency and transparency. In addition, they consider how approaches to conflicts involving digital property in the metaverse are gradually developing, alongside the emergence of new alternative and online dispute resolution (ADR and ODR) techniques. The authors further reflect on how emerging technologies, including virtual reality and AI, are reshaping the regulation and enforcement of digital assets. Ultimately, they emphasise the need for adaptive, forward-looking legal frameworks that can ensure fair and effective governance in a rapidly transforming virtual economy.

In the final article, **Marco Giacalone, Nishat Hyder-Rahman and Elisabeth Alofs** critically reflect on the contributions published in this Special Section against the backdrop of the CREA2 and CREA3 projects. The authors highlight the transformative power of integrating AI into legal practice to enhance access to justice and efficiency. At the same time, they draw attention to the risks and pitfalls, emphasizing the importance of embedding procedural safeguards, data protection, transparency, and human oversight. Concluding by considering the future of AI-driven legal practice, within family law and beyond, the authors underline the imperative of aligning technological innovation with fundamental rights and values.

As this overview demonstrates, this Special Section brings together researchers from around the world and from diverse disciplines – primarily law, but also economics, engineering and information technology – each contributing their own perspective and expertise. The authors examine how technology is transforming the law, legal practice and, by extension, society as a whole. Several key themes emerge across the contributions; foremost, access to justice. Moreover, the issue of digitalisation has an important human rights dimension, particularly with regard to privacy issues. Together, these contributions reflect a shared commitment to understanding and shaping the future of law in a rapidly evolving digital society.

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