

ARTIFICIAL INTELLIGENCE CHALLENGING CORE STATE FUNCTIONS. A FOCUS ON LAW-MAKING AND RULE-MAKING

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ABSTRACT: The use of AI in the public sector is emerging around the world and its spread affects the core States functions: the administrative, the judiciary, and the legislative. Nevertheless, a comprehensive approach to AI in the life-cycle of rules—from the proposal of a new rule to its implementation, monitoring and review—is currently lacking in the rich panorama of studies from different disciplines. The analysis shows that AI has the power to play a crucial role in the life-cycle of rules, by performing time-consuming tasks, increasing access to knowledge base, and enhancing the ability of institutions to draft effective rules and to declutter the regulatory stock. However, it is not without risks, ranging from discrimination, to challenges to democratic representation. In order to play a role in achieving law effectiveness while limiting the risks, a complementarity between human and AI should be reached both at the level of the AI architecture and ex post. Moreover, an incremental and experimental approach is suggested, as well as the elaboration of a general framework, to be tailored by each regulator to the specific features of its tasks, aimed at setting the rationale, the role, and adequate guardrails to AI in the life-cycle of rules. This agile approach would allow the AI revolution to display its benefits while preventing potential harms or side effects.

KEYWORD: artificial intelligence, regulation, legislation, impact assessment, simplification, consultation

SUMMARY: 1. TRANSFORMING PUBLIC SECTOR GOVERNANCE: THE MULTIFACED IMPACT OF AI ON ADMINISTRATIVE, JUDICIAL, AND LEGISLATIVE FUNCTIONS.— 2. DIGITALISATION AND AI FOR DRAFTING LEGISLATION AND REGULATION.— 3. ENCODING A RULE WHILE IT IS BEING DRAFTED AND ADJUDICATION BY AI.— 4. IS THERE A ROOM FOR AI SETTING RULES?— 5. AI FOR CONSULTATIONS.— 6. WHAT DIGITISATION AND AI CAN DO FOR IMPACT ASSESSMENT?— 7. AI AND

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1. TRANSFORMING PUBLIC SECTOR GOVERNANCE: THE MULTIFACETED IMPACT OF AI ON ADMINISTRATIVE, JUDICIAL, AND LEGISLATIVE FUNCTIONS

The use of artificial intelligence-AI in the public sector is emerging around the world and its spread affects the core States functions: the administrative, the judiciary, and the legislative¹.

Early examples concern the administrative function. The most popular applications deal with civil and criminal enforcement, allowing more effective and targeted controls in sensitive sectors, such as such as policing², road controls³, fiscal controls⁴,

¹ Despite the worldwide ever-increasing recourse to AI systems in the public sector, a comprehensive mapping is lacking. For a tentative inventory, see European Commission, JRC, *Selected AI cases in the public sector*, 2021 (<http://data.europa.eu/89h/7342ea15-fd4f-4184-9603-98bd87d8239a> accessed June 20, 2023), and Luca TANGI, Colin VAN NOORDT, Marco COMBETTO, Dietmar GATTWINKEL and Francesco PIGNATELLI, *AI Watch. European landscape on the use of Artificial Intelligence by the Public Sector*, Publications Office of the European Union, Luxembourg, 2022. On OECD countries see Jaime BERRYHILL *et al.*, Hello, World: Artificial intelligence and its use in the public sector, in *OECD Working Papers on Public Governance*, n. 36/2019, OECD Publishing, Paris, and chapter 1, OECD, *OECD Regulatory Policy Outlook 2021*, 2021, OECD Publishing, Paris. In the US, according to the Executive Order 13960/2020 (*Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government*) federal agencies should publish inventories of non-classified and non-sensitive use cases of AI; according to the first annual inventories (<https://www.ai.gov/ai-use-case-inventories/>, accessed September 20, 2023), AI uses in the federal government in 2022 were more than 1,100 (*Are government decisions being made by AI? Lawmakers want to mandate disclosure*, NextGov, June 9, 2023 <https://www.nextgov.com/emerging-tech/2023/06/are-government-decisions-being-made-ai-lawmakers-want-mandate-disclosure/387373/> accessed September 20, 2023). For the most comprehensive analysis to date, see David Freeman ENGSTROM, Daniel E. HO, Cathrine M. SHARKEY, Mariano-Florentino CUELLAR, *Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies*, Report submitted to the Administrative Conference of the United States, 2020.

² In Germany, the State Criminal Police Office of North Rhine-Westphalia has been using the “Skala” software since 2015: once a week the system provides maps showing residential districts with a high probability of burglary based on past experience (European Commission, Joint Research Centre, *Selected AI cases in the public sector*, cit.).

³ In Netherlands, a service under the Ministry of Water and Infrastructure Management deploys a machine learning for road accident prediction, based on data from incidents recorded between 2012 and 2016, road characteristics, speed and flow traffic data and weather data (European Commission, JRC, *Selected AI cases in the public sector*, cit.).

⁴ A supervised deep mining algorithm is used in France in order to detect fraud with value declarations (European Commission, JRC, *Selected AI cases in the public sector*, cit.). In Latvia, the State Revenue Service automatically verify the submitted declarations (<https://www.vid.gov.lv/en/electronic-declaration-system>); a similar approach has been embraced by the Italian Revenue Agency (2023-2025 agreement between the Ministry for economic and finance and the Agenzia delle entrate, 2023), as well as by the Italian institute for social security-INPS (“Intelligenza artificiale e amministrazioni centrali”, Report 4, 2022, in *Biolaw Journal*, n. 1, 2022, p. 261-274).

social benefit checks⁵, occupational safety⁶, food safety⁷, public procurement⁸, competition public enforcement⁹. Moreover, adjudication by or with the support of AI is increasing in many fields. For instance, workplace allocations to teachers according to their ranking level¹⁰, or subsidy grants¹¹. AI is also improving administration of services, such as the numerous applications of so-called smart cities¹². In addition, promising experiments promote a public administration which is collaborative towards citizens and firms. For instance, AI detects people who are eligible for benefits¹³, signals any risks of infringement in order to support compliance¹⁴, or identifies and communicates “with parties that may be affected by new or altered rules”¹⁵.

⁵ In UK, a predictive system (no longer operational) was used in Hackney County to identify children and families vulnerable and at risk of child abuse, leveraging on data such as school attendance, housing information, economic indicators. The system was heavily criticized because of the lack of transparency over the risks indicators and the people involved (European Commission, JRC, *Selected AI cases in the public sector*, cit.). See also footnote 75.

⁶ For AI in managing occupational safety and health inspections in construction sites in Lombardy Region (Italy), see OECD, *DataDriven, InformationEnabled Regulatory Delivery*, OECD Publishing, Paris, 2021, p. 14 ff.

⁷ Since November 2019, the French Ministry of Agriculture use AI to target restaurant for health inspections (IALim), leveraging on consumer feedback on online notification websites (European Commission, JRC, *Selected AI cases in the public sector*, cit.). In Lombardy Region (Italy), AI help in developing risk-based classification of food establishment leveraging on data such as positive/negative audit outcomes, resolution of previous nonconformities, or propensity for compliance (Alessio VIGNA, “Modello di classificazione in base al rischio. Revisione dei metodi di pianificazione dei controlli ufficiali per la sicurezza alimentare in Lombardia”, in *Rassegna dell'Osservatorio AIR*, n. 3, 2023).

⁸ For instance, machine learning can analyse data published on Tenders Electronic Daily-TED (the online version of the ‘Supplement to the Official Journal’ of the EU) and launch alerts when some risk indicator occur, e.g. short tender periods, limited number of proposals or contracts awarded competitively, large discrepancies between award value and contract amount (Alberto SANCHEZ-GRAELLS, *Data-driven and digital procurement governance: Revisiting two well-known elephant tales*, in *Communications Law - Journal of Computer, Media and Telecommunications Law*, vol. 24, n. 4, 2019, p. 157 ff.).

⁹ Cary COGLIANESE and Alicia LAY, Antitrust by algorithm, in *Stanford Computational Antitrust*, vol. 2, 2022, p. 1 ss.

¹⁰ In Italy, algorithm malfunction in the assignment of school substitutes (art. 12, Order of the Italian Ministry of education, May 6, 2022) led to litigations (e.g. Rome tribunal, sezione lavoro, judgment n. 1463/2023).

¹¹ For instance, the Slovenian “E-Sociala” optimise social benefits allocation and allow citizens to calculate their social rights (European Commission, JRC, *Selected AI cases in the public sector*, cit.).

¹² For instance, real time monitoring of traffic flow; information to consumers on the density of people in a given area of a city, or on a hazard on the street; automatic control of low-emission vehicle access to urban restricted areas (for Italian application see Report 3/2022 - *Smart cities e intelligenza artificiale*, in *Biolaw Journal*, n. 1/2022, p. 253-259).

¹³ In a Barcelona trial, IA identifies families eligible for a public benefits, informs them of their status with an SMS, and sends a link to accept the benefit (Juli PONCE SOLÉ, *De como la calidad normativa y los sistemas algorítmicos, unidos a las aportaciones conductuales, pueden contribuir a la buena administración: a propósito del estudio El impacto de los trámites administrativos en el acceso a las prestaciones sociales. Una perspectiva conductual – Nudging aplicado a la Mejora de la Regulación y al Uso de Algoritmos y de Inteligencia Artificial*, ([wordpress.com](https://www.wordpress.com)) June 3, 2022.

¹⁴ “GISA Self-assessment” is an open source digital service provided to firms working in the food and veterinary areas by the Campania Region (Italy), allowing an algorithmic calculation of firms’

Footnote 15 in next page.

As for the judiciary function, AI can both replace human judges, or (more likely)¹⁶ support them. Examples of technical help are advanced case-law search engines¹⁷, speech-to-text applications¹⁸, and texts pseudonymization¹⁹.

What about AI in legislative and regulatory functions?

The applications of AI in the life-cycle of rules, from the drafting of new rules to the retrospective review of existing regulation, might appear less obvious. However, they are certainly no less promising and sensitive than those affecting other State functions²⁰. Moreover, AI for regulatory and legislative functions presents a distinctive set of features that deserve to be classified.

A comprehensive approach to the life-cycle of rules is currently lacking in the rich panorama of studies dealing with AI in the public sector from a wide range of disciplinary perspectives, such as philosophy, drafting, legimatics, parliamentary law, administrative law, constitutional law, regulation, law & economics, political science, computer science, informatics. Some of these deal with the different phases of the the life-cycle of rules. There are some overlapping interests, but scholars hardly quote each other, which suggests that they rarely read each other's work. The example of drafting and regulation is emblematic: both approach machine processable rules from different points of view (the former analyzing the challenges posed to legislative drafting, and the latter the advantages and risks of automatic adjudication). Other phases tend to remain in the shadows, for instance, AI for *ex ante* impact assessment.

The paper proposes a comprehensive analysis of AI in law and the regulation life-cycle. From the proposal of a new rule to its implementation, monitoring and review, all these phases raise distinctive challenges and are approached with a dedicated analysis. It also claims that a reciprocal enrichment (if not a cross disciplinary

risk level (Germana COLARUSSO and Cinzia MATONTI, "GISA Autovalutazione: un servizio digitale per la compliance volontaria in sicurezza alimentare e sanità pubblica veterinaria", in *Rassegna dell'Osservatorio AIR*, n. 3, 2023).

¹⁵ Cary COGLIANESE, "E-rulemaking: Information Technology and the Regulatory Process: New Directions in Digital Government Research", in *Administrative Law Review*, Vol. 56. N. 2, 2004, 353 FF.

¹⁶ John MORISON and Adam HARKENS, Re-engineering Justice? Robot Judges, Computerised Courts and (Semi) Automated Legal Decision-Making, in *Legal Studies*, vol. 39, n. 4, 2019, pp. 618-635 (p. 634-635). See also Barbara MARCHETTI, "Giustizia amministrativa e transizione digitale. Spunti per riflettere su un futuro non troppo lontano", in Margherita RAMAJOLI (ed.), *Una giustizia artificiale?*, Il Mulino, Bologna, 2023, pp. 59-90.

¹⁷ European Commission for the efficiency of justice-CEPEJ, *European ethical charter on the use of artificial intelligence in judicial system and their environment*, 2019.

¹⁸ Cinara ROCHA and João CARVALHO, "Artificial intelligence in the judiciary: uses and threats", in *CEUR Workshop Proceedings*, 2022.

¹⁹ It is currently experimented by the Court of Cassation and the Ministry of Justice, in France, and by the Tribunal of Genoa, in Italy (European Commission, JRC, *Selected AI cases in the public sector*, cit.).

²⁰ Nicoletta RANGONE, "A Regulatory Reboot Cannot Neglect Artificial Intelligence", in *The Regulatory Review. University of Pennsylvania*, December 15, 2022.

doctrinal discourse)²¹ is crucial in order to support public authorities in dealing with legislative and regulatory processes reshaped by AI.

What above builds on some of the studies mentioned and on numerous concrete examples, in order to suggest an original approach grounded on previous works of effective administrative law²². The latter is seeking rules and implementing decisions with the capacity to achieve regulatory goals while minimising regulatory burdens and avoiding unwanted effects²³. This approach leads to a juridical system, which support compliance and feed trust, respectively, a characteristic and an essential element of effective laws²⁴. AI can be considered a new tool in building an effective administrative law, by performing time-consuming tasks, increasing access to knowledge base, allowing fine-tuning interventions, both in enforcement controls and in identifying people who is eligible for support. AI is also a technological support capable of amplifying the effectiveness of better regulation tools (such as consultation, impact assessment, and stock review), thus improving the effectiveness of rules. At the same time, however, the effectiveness of laws and regulations is also challenged by AI.

The paper is structured as follows. It begins by addressing the potential benefits and risks of drafting a law or regulation with the support of AI (Para. 2). Next, it analyses the implication of machine processable rules and adjudication by AI (Para. 3). Then it approaches the key question of whether AI can actually act as legislator or regulator (Para. 4). In the following paragraphs, the paper critically addresses the role of AI in improving better regulation tools: consultation (Para. 5), *ex ante* impact assessment (Para. 6), *ex post* evaluation (Para 7). It emerges that AI has the power to play a crucial role in the life-cycle of rules, but is not without risks, ranging from

²¹ Such as the one “developed around, for instance, the legal obligation to provide a meaningful explanation on the one hand and ‘explainable machine learning’ on the other, often co-authored by lawyers, computer scientists and philosophers” (Mireille HILDEBRANDT, “Code-driven Law: Freezing the Future and Scaling the Past”, in Simon DEAKIN and Christopher MARKOU (eds.), *Is law computable? Critical perspectives on law and artificial intelligence*, Hart Publishing, Oxford, New York, Dublin, 2020, chapter 3, p. 82-83).

²² “The administrative game is being played on a field identified by public policies and delimited primarily by countless *rules*, i.e., provisions that directly affect the organisation or activity of the end-users. However, the *legislation* (composed by rules and principles) is drafted in an approximate or non-transparent manner, is often unenforceable, is designed without regard to organisational data, is unenforced, generates elusive behaviour, is characterised by violations that are not adequately counteracted by the planned controls, and produces undesirable effects. *Administrative decisions* (which implement the rules) are frequently delayed, defensive, poorly motivated, challenged, sometimes perceived as unfair, or as too weak, sometimes not implemented even when the enforcement order comes from a judge. In short, the lack of effectiveness is the current stumbling stone of administrative law” (Guido CORSO, Maria DE BENEDETTO, Nicoletta RANGONE, *Diritto amministrativo effettivo. Una introduzione*, Il Mulino, Bologna, 2022, p. 19, the translation is ours).

²³ Maria MOUSMOUTI (*Designing Effective Legislation*, Edward Elgar Publishing, Cheltenham-UK, Northampton-USA, 2019) splits this definition into three concepts: efficacy (capacity to contribute to the policy goals and values), effectiveness (capacity to bring results) and efficiency (minimum costs for maximum benefits).

²⁴ Marco D’ALBERTI, “Prefazione”, in Guido CORSO, Maria DE BENEDETTO, Nicoletta RANGONE, *Diritto amministrativo effettivo. Una introduzione*, cit., p. 15-17.

discrimination to challenges to democratic representation. In order to play a role in achieving law effectiveness while limiting the risks, this complementarity should be implemented both at the level of the AI architecture (by clearly set tasks and roles), and ex post (by allowing a complete human control of each analysis and regular evaluations of outputs). Moreover, an *incremental and experimental* approach is suggested, as well as the elaboration of a *general framework*, to be *tailored by each regulator* to the specific features of its tasks, aimed at setting the rationale, the role, and adequate guardrails to AI in the life-cycle of rules (Para. 8).

2. DIGITALISATION AND AI FOR DRAFTING LEGISLATION AND REGULATION

Legislative drafting, traditionally viewed as a mere skill²⁵, is now qualified as a new sub-discipline of law devoted to “the process of constructing a text of legislation”²⁶.

The body of literature approaching the computer-based drafting system goes under the name of “legimatics”²⁷ and encompasses legal drafters and informatics²⁸. An emerging field of LegalTech deals with technologies applied in the field of (public and private) law²⁹. In these frameworks, automated or semi-automated drafting simplify complex but repetitive drafters’ tasks, improve the way a rule is constructed³⁰ and is available digitally³¹.

²⁵ “Legislative technique: a craft to be valued” is the title of a special issue published in *Il Foro italiano*, 1985, V, 282 ss.

²⁶ “A new sub-discipline of law is born. It has a theoretical basis in phronetic legislative drafting. It has its principles and values in the hierarchy depicted in the pyramid of values. It has a goal in effectiveness of legislation. And it has recognised tools to achieve that goal” (Helen XANTHAKI, “Legislative drafting: a new sub-discipline of law is born”, in *IALS Student Law Review*, Vol. 1, Issue 1, 2013, pp. 57-70, p. 57).

²⁷ Wim J.M. VOERMANS, Wolmoed FOKKEMA, Remco VAN WLJK, “Free the Legislative Process of its Paper Chains: IT-inspired Redesign of The Legislative Procedure Cycle”, in *The Loophole*, January, 2012, pp. 54-73 (p. 58). On the need for drafters to cooperate with IT experts, see Giuseppe Ugo RESCIGNO, Relazione di sintesi; Atti del Seminario: Fonti, tecniche legislative, fattibilità, implementazione delle leggi e sistemi informativi, in *Quaderni a cura del servizio studi legislativi e promozione culturale dell’Assemblea regionale siciliana*, 28, 1990, pp. 753-754.

²⁸ Wim J.M. VOERMANS, Wolmoed FOKKEMA, Remco VAN WLJK, “Free the Legislative Process of its Paper Chains: IT-inspired Redesign of The Legislative Procedure Cycle”, cit., p. 59.

²⁹ LegalTech “draws on (i) advances in IT, (ii) progress in the study of the theory of law, (iii) the use of standards, (iv) understanding the business of lawmaking, and (v) the recognition of the need to consider the broader ethical and legal implications early on” (Monica PALMIRANI, Fabio VITALI, Willy VAN PUymbroEck, Fernando Nubla DURANGO, *Legal drafting in the era of artificial intelligence and digitization*. Study commissioned by the EC, Directorate-General for Informatics Solutions for Legislation, Policy & HR, Brussels, 2022, p. 16, <https://joinup.ec.europa.eu/collection/justice-law-and-security/solution/leos-open-source-software-editing-legislation/document/drafting-legislation-era-ai-and-digitisation>).

³⁰ “The process of writing a rule can be laborious, especially if it contains many parts or addresses complex problems. In addition, writing a rule often involve inputs from a number of staff members

Footnote 31 in next page

In the last twenty years, the digitalisation of legislative sources has emerged³². Technologies supporting legislative drafting are now endorsed by the digital ready principle, introduced by the better regulation agenda of the European Union³³, and many regulators and legislators around the world are using or experimenting with it³⁴. For instance, the legislative drafting system SOLON translates into an algorithm 254 drafting guidelines of the Flemish government³⁵. The European Commission has developed the software LEOS (Legislation Editing Open Software), which addresses the need to generate draft legislation in a legal XML format, thus facilitating the editing or reviewing of legislative texts, as well as supporting “interoperability between European institutions”³⁶. The European Parliament has launched an open access advanced management amendment tool offered in open access (AT4AM)³⁷. In Italy, the Parliament is experimenting with an algorithmic tool intended to support its amendment-writing activity;³⁸ UK and Scottish Parliaments and Governments

from different professional backgrounds (e.g., lawyers, engineers, economists, and enforcement staff). Style-checking software, templates, and collaborative drafting tools are among the IT tool relevant to this task” (Cary COGLIANESE, “E-rulemaking Information Technology and Regulatory Policy”, in cit., p. 390).

³¹ Elena GRIGLIO and Carlo MARCHETTI, “La ‘specialità’ delle sfide tecnologiche applicate al drafting parlamentare: dal quadro comparato all’esperienza del Senato italiano”, in *Osservatorio delle fonti*, n. 3, 2022, pp. 361-386, p. 369.

³² “Several official journals, national archives, and parliaments have sought to manage legal sources within legal corpora with the use of technologies like databases, XML, RDFmetadata, and logic formulas” (Monica PALMIRANI, Fabio VITALI, Willy VAN PUymbROECK, Fernando Nubla DURANGO, *Legal drafting in the era of artificial intelligence and digitization*, cit., p. 13).

³³ In this document, the ‘digital by default’ is promoted in forthcoming EU legislation “as an important tool to support digital transformation” (European Commission, *Better regulation: Joining forces to make better laws*, COM/2021/219 final). This approach is in line with the 2030 Digital Compass Communication (2030 *Digital Compass: the European way for the Digital Decade*, COM(2021) 118), and has been developed by the Better Regulation Toolbox 2021 (Tool 28, “Digital ready policy-making”).

³⁴ In 2021, one out of three parliamentary chambers at a global level (forty-nine per cent of 116 parliaments in 91 countries) “had systems for managing legislative text in digital format as it moves through deliberations” (Interparliamentary Union, *World e-Parliament Report 2020*, p. 5 and 52).

³⁵ Stijn DEBAENE, Raf VAN KUYCK and Bea VAN BUGGENHOUT, “Legislative Technique as Basis of a Legislative Drafting System”, in *Information and Communication Technology Law*, vol. 9, issue 2, 2000, pp. 149-159. In the Netherlands, the Legislative Design and Advisory system (LEDA) alerts drafters and draws attention to relevant directives for drafting rules, for instance providing “information in the form of model clauses to be considered, advice on structure, help for definitions” (Wim VOERMANS, Wolmoed FOKKEMA, Remco VAN WIJK, “Free the Legislative Process of its Paper Chains: IT-inspired Redesign of The Legislative Procedure Cycle”, cit., p. 61).

³⁶ <https://joinup.ec.europa.eu/collection/justice-law-and-security/solution/leos-open-source-software-editing-legislation/release/330> (accessed June 13, 2023).

³⁷ Elena GRIGLIO and Carlo MARCHETTI, “La “specialità” delle sfide tecnologiche applicate al drafting parlamentare: dal quadro comparato all’esperienza del Senato italiano”, cit., p. 371.

³⁸ “This system allows the user to directly edit the text of the provision and obtain the corresponding amendment proposal structured in the form of an amendment, according to the rules of technical drafting of legislative texts” (Laura TAFANI, “A Legislative Drafter’s Perspective”, in *ChatGPT series*, April 13, 2023, <https://betterregulation.lumsa.it/chatgpt-essay-series-legislative-drafters-perspective>, accessed on June 29, 2023).

developed a tool (Lawmaker) which create amendments by editing a copy of the bill³⁹.

While digitalisation plays a crucial supporting role, AI takes it a step further. For instance, language processing tools are able to help in achieving clear, compelling writing, from grammar and spelling, to style, tone and incorrect legal citations, through suggestions that are comprehensive, and help to communicate more effectively as intended⁴⁰. In the US House of Representatives, computational text analysis supports politicians, administrative staff and citizens understand a proposal impact by tracking how amendments change legislation and the impact of proposed legislation to current law⁴¹.

Recent advancements in AI might improve the supportive role and get closer to the core writing tasks, while at the same time challenging regulators and legislators. For instance, Large Language Models-LLMs⁴² can help decision-makers move from legal jargon to citizens narrative, thus improving readability and accessibility of rules, administrative decisions⁴³, and all communication with the public (e.g. guidelines or websites)⁴⁴. Paradoxically, this same technology is challenging the traditional system of parliamentary scrutiny by allowing one amendment to be multiplied into millions by small textual or punctuation changes⁴⁵. At the same time, the solution is likely to come from AI: the Italian Senate is experimenting with a “text clustering algorithms” in order to detect “massive amendments”⁴⁶.

³⁹ Matt LYNC, “Lawmaker – the new legislative drafting service of the UK and Scotland”, in *The Loophole*, n. 2, 2022, pp. 24-39 (p. 35).

⁴⁰ The already mentioned LEOS is currently piloting the use of AI to detect patterns, common errors, and good practices (<https://joinup.ec.europa.eu/interoperable-europe/leos>).

⁴¹ The Select Committee on the Modernisation of Congress, Final Report n. 116-562, 2020, p. 72; see also Elena GRIGLIO and Carlo MARCHETTI, “La “specialità” delle sfide tecnologiche applicate al drafting parlamentare: dal quadro comparato all’esperienza del Senato italiano”, cit., p. 384 and 369.

⁴² LLM, are also known as foundation models, forms the basis of many applications, such as Open AI’s ChatGPT, Microsoft’s Bing and many website chatbot (Ada Lovelace Institute, *Explainer: what is a foundation model?*, July 17, 2023).

⁴³ For instance, AI can monitor the clarity of tendering documents in order to “decrease the risk of bidders misunderstanding the tender material” and thus “lowering the total cost of the bid” (Deloitte, *Study on up-take of emerging technologies in public procurement*, DG GROW G.4, Final Report, February 2020, p. 15).

⁴⁴ Generative AI can improve public authorities’ communication with the public, from legalese jargon to a more accessible voice tone or style (FCW, May 17, 2023 ([Federal CIO says IDEA Act guidance coming this summer - FCW](#)). In Spain, the “060 Service” (a contact point for all information concerning the services provided by the public administrations) uses Natural Language Processing to answer frequently asked questions and to “translate” legalese into plain language (European Commission, JRC, Selected AI cases in the public sector, cit.).

⁴⁵ For instance, “in 2016, AI was tested during the 17th legislature of the Italian Senate (with disruptive effects) for the production of amendments to the so-called ‘Renzi-Boschi’ constitutional reform (A.S. no. 1429): two senators of the ‘Northern League’ presented approximately 82 million amendments produced on the basis of an algorithm capable of almost endlessly processing textual modification proposals of the bill” (Laura TAFANI, “A Legislative Drafter’s Perspective”, in *ChatGPT series*, cit.).

⁴⁶ Tommaso AGNOLONI, Carlo MARCHETTI, Roberto BATTISTONI, Giuseppe BRIOTTI, Clustering Similar Amendments at the Italian Senate, paper presented at the 13th Edition of its Lan-

To conclude, digitalisation requires careful human supervision, since rule-making and law-making are not a simple implementation of drafting rules, but an open process in which the drafter “weighs different possible solutions in view of their relative appropriateness”⁴⁷. Human supervision is all the more important when drafting moves to AI, since the recourse to this technology must respect the democratic separation of powers⁴⁸, ensure the correct interpretation of the law translated into plain language, citizens narrative, or into a code, and avoid codified rules which result in discrimination (as will be articulated in the following paragraph).

3. ENCODING A RULE WHILE IT IS BEING DRAFTED AND ADJUDICATION BY AI

The digital ready principle, endorsed by the European institutions, is a developed reality in some countries⁴⁹. The related concept of machine processable rules (or law as code)⁵⁰, which arises in the legimatics⁵¹ and LegalTech⁵² frameworks, could open

guage Resources and Evaluation Conference of the European Language Resources Association, Marseille 2022. According to the World e-Parliament Report 2020 (cit.), in 2021 6% Parliaments worldwide were using AI-based technologies (p. 5 and 56) and the percentage is increasing rapidly. For instance, AI-based voice recognition systems “is on the threshold of becoming a standard tool in drafting” (Daniel LOVRIC, *The future of legislative drafting*, Paper for Canadian Institute for the Administration of Justice-CIAJ Legislative Drafting Conference, 8-9 September 2022, Ottawa, p. 5: https://ciaj-icaj.ca/wp-content/uploads/documents/2022/10/ld266_daniel-lovric_the-future-of-legislative-drafting-a-strategic-approach.pdf?id=15558&1683405114); it is used in Italy (Elena GRIGLIO and Carlo MARCHETTI, “La “specialità” delle sfide tecnologiche applicate al drafting parlamentare: dal quadro comparato all’esperienza del Senato Italiano”, cit., p. 379) and in Estonia to increase the accuracy of transcripts and changing traditional time-consuming stenographic work into a supervisory task (see <https://www.riigikogu.ee/en/press-releases/others/the-riigikogu-has-a-new-system-for-making-verbatim-reports/>, accessed June 17, 2023, quoted by the European Commission, JRC, *Selected AI cases in the public sector*, cit.).

⁴⁷ See Wim VOERMANS (“Computer-assisted legislative drafting in the Netherlands: the LEDA system”, 2019, in <https://ial-online.org/wp-content/uploads/2019/07/Voermans-Legimatics.pdf>), whose reasoning referred to law-making can be applied to rule-making also.

⁴⁸ “The rule of law implies that neither the legislature nor public administration get the last word on the meaning (the interpretation and application) of the law. Judgment is reserved for the courts. What if legislation is translated into computer code, that is, disambiguated, and what if at that very moment both its interpretation and application are de facto decided? What should courts decide if a legislature enacts law in the form of code? To what extent is the meaning of the law contestable in a court of law if the law has been disambiguated and caught in unbending rules that only allow for explicitly formulated (and formalised) exceptions? What if courts use the same software as the public prosecutor, or depend on the same legal technologies as Big Law?” (Mireille HILDEBRANDT, “Code-driven Law: Freezing the Future and Scaling the Past”, cit., p. 70).

⁴⁹ See, for instance, the Danish “Guidance on digital-ready legislation. On incorporating digitisation and implementation in the preparation of legislation” 2018 [Guidance on digital-ready legislation \(digst.dk\)](https://digst.dk), accessed in June, 16, 2023.

⁵⁰ “The idea with “rules as code” is that the government would make its single coded version available via an API [Application Programming Interface] to the public, including developers, not just those in government” (Matthew WADDINGTON, “Machine-consumable legislation: A legislative drafter’s perspective – Human v artificial intelligence”, in *The Loophole*, June 2019, pp. 22-52, p. 27).

Footnote 51 and 52 in next page

the door to a new era in which rules should preferably be written in a dual format, the traditional and the codified. This enables a computer to read the logic of a rule.

The rule as a code system has several advantages.

Firstly, the simplification embraced by this approach is positive in itself, since it requires clarity, precision, and plain language⁵³. In other words, unclear terminology, unnecessary complex phrases, inconsistency among paragraph and sentences should be avoided⁵⁴. Attaining rules with such characteristics is a substantial part of legislative drafting exercise⁵⁵ and an element of the better regulation approach⁵⁶.

Secondly, rules as a code enhances drafting activities, by enabling an automated detection of inconsistencies or incompatibilities among rules⁵⁷.

Thirdly, this benefits the consistency of new rules with the regulatory stock, facilitates impact assessment of new rules⁵⁸ and their *ex post* review ones⁵⁹ (as will be

⁵¹ Leyman E. ALLEN and Charles S. SAXON, “Computer-Aided Normalizing and Unpacking: Some Interesting Machine-Processable Transformations of Legal Rules”, in Charles WALTER (ed.), *Computing Power and Legal Reasoning*, St. Paul: West Pub. Co., 1985, pp. 495-572 (p. 495 ss.).

⁵² Monica PALMIRANI, Fabio VITALI, Willy VAN PUymbROECK, Fernando Nubla DURANGO, *Legal drafting in the era of artificial intelligence and digitization*, cit., p. 6.

⁵³ According to the Danish Guidance on digital-ready legislation, “the rules should be worded clearly and simply, unambiguously and consistently. Simple rules do not necessarily mean a brief law text. It may require more words to make it unambiguous and clear what the rules are. This does not, however, change the overall legal principle that superfluous words in the law text should be avoided” (pp. 8, 9). In the same vein is the European Commission Better Regulation Toolbox 2021, Tool#28 “Digital-ready policymaking”, p. 23.

⁵⁴ “Objective criteria in the legislation are a prerequisite for automation of case processing. (...) For example, the criterion “majority of the year” may be subject to discretion and interpretation whereas “more than 250 calendar days per year” can be assessed objectively. If fully automated case processing is introduced based on objective criteria (...) it must be ensured that the decision is sufficiently transparent to enable the citizen to assess his/her avenues of complaint and it must be possible to verify the decision” (*Guidance on digital-ready legislation*, cit., p. 11).

⁵⁵ Helen XANTHAKI, *Drafting Legislative. Art and technologies of rules for regulation*, Hart Publishing, Oxford, New York, Dublin, 2014.

⁵⁶ European Commission Better Regulation Toolbox 2021, TOOL # 53 p. 463 (with regard to consultation).

⁵⁷ Matthew WADDINGTON, “Research Note. Rules as Code”, in *Law in Context*, vol. 37, n. 1, 2020, p. 179-186.

⁵⁸ “Once rules are encoded, they can be tested, and that testing can be done automatically” (Jason MORRIS, “Rules as Code: How Technology May change the Language in which Legislation is Written, and What it Might Mean for Lawyers of Tomorrow”, in *Techshow*, February 5, 2021, pp. 2-16, p. 5).

⁵⁹ For instance, “the [US] Transportation Department’s algorithmic tools exert a unique influence on the agency’s rulemaking process. The department drafts its rules to fit a structured, agency-wide format designed to organize key meta-data elements, such as who or what the regulated entity is and who is responsible for enforcement. [It] (...) makes it relatively straightforward for subject-matter experts to encode the substance of Transportation Department rules into a “machine-readable” format, thus decreasing the cost of “teaching” the Transportation Department’s algorithmic tools the semantic meaning of regulatory text and obviating the need for NLP” (Catherine M. SHARKEY and Cade MALLETT, “Artificial Intelligence for Retrospective Regulatory Review”, in *The Regulatory Review*, September 12, 2023).

discussed in Para. 6 and 7), as well as allow the traceability of automatic adjudication and adjudication through AI⁶⁰.

Fourthly, rule as a code allows an automatic adjudication of machine readable unambiguous rules⁶¹, whose application does not imply discretion or room for appreciation (e.g. in case of electronic auction awarded on the basis of the price only⁶², or when the law sets an age limit for a given activity, such as aircraft piloting regulation setting an age limit for aircraft pilots)⁶³.

Lastly, machine readable rules might support adjudication by AI. In the latter example, the age limit is the easiest criterion to enforce, but it could unjustifiably exclude very (if not the most) experienced pilots. Differently, the decision to renew a licence could be based on a risk-based assessment performed by AI⁶⁴, allowing a tailored approach which is more effective in pursuing the public interest (i.e. safe flights)⁶⁵.

The rule as a code raises some risks.

⁶⁰ Anoush DARABI, “New Zealand explores machine-readable laws to transform government”, 11 May 2018, <https://apolitical.co/solution-articles/en/new-zealand-explores-machine-readable-laws-to-transform-government>.

⁶¹ For instance, the European regulation n. 561/2006 (on the harmonisation of certain social legislation relating to road transport) prescribes daily rest or weekly rest period to road transport drivers. The law enforcement is supported by tachograph, which registers all activities. “In practice, a police officer may pull a truck over for an inspection where the tachograph data is read and interpreted by some software. Depending on the verdict of the program, the driver may be instantly fined or sometimes even imprisoned. It is known that many erroneous automated verdicts are issued”. This is mainly related to the lack of clarity of the legislation, as demonstrated by Ana de ALMEIDA BORGESA, Juan José CONEJERO RODRIGUEZ, David FERNANDEZ-DUQUE, Mireia GONZALEZ BEDMAR, Joost J. JOOSTEN (“To Drive or Not to Drive: A Logical and Computational Analysis of European Transport Regulations”, in *Information and Computation*, vol. 280, 2021).

⁶² Art. 33, Italian legislative decree n. 36/2023. Another provision which do not imply discretion is the article establishing the criteria for automatic exclusion from tenders (art. 94 of the Italian legislative decree n. 36/2023 (public procurements legislation).

⁶³ “The holder of a pilot licence who has attained the age of 60 years shall not act as a pilot of an aircraft engaged in commercial air transport” (annex I, European Regulation n. 1178/2012, laying down technical requirements and administrative procedures related to civil aviation aircrew).

⁶⁴ Cary COGLIANESE and David LEHR, “Regulating by Robot: Administrative Decision Making in the Machine Learning Era”, in *The GeorgeTown Law Journal*, vol. 105, 2017, pp. 1147-1223 (p. 1171).

⁶⁵ The algorithm could run “through all of the available data about the applicant—say, school records, medical records, social media postings, and fine-grained data from the flight recorders from previous training flights flown by the applicant” (Cary COGLIANESE and David LEHR, “Transparency and Algorithmic Governance”, in *Administrative Law Review*, vol. 71, n. 1, 2019, pp. 1-56, p. 10). The algorithm might also “account for how a pilot’s age can both increase risks due to health limitations and decrease risks due to greater experience” (Cary COGLIANESE, “Moving toward personalised law”, in *The University of Chicago Law Review online*, 2022, <https://lawreviewblog.uchicago.edu/2022/03/09/wp-coglianesef/>). “In a personalized law regime, rather than establishing a one-for-all age threshold, these controls would be personalized, relying also on additional factors” (Omri Ben-SHAHAR and Ariel PORAT, *Personalized Law. Different Rules for Different People*, Oxford University Press, Oxford, 2021, p. 110-111).

Firstly, the extreme simplification required to encode rules can lead to an impoverishment, if not a distortion, of the normative dictate. Therefore, the administrative implementation phase should not constrain rule-writing, leading to oversimplification or (worse) influencing the content of rules⁶⁶.

Secondly, this approach tends to limit the discretionary power in adjudication⁶⁷. Finding the right balance between rules and discretion is an open problem⁶⁸, which falls into the “automation-versus-human debate”⁶⁹. Otherwise, a rule could introduce obligations, rights, and prohibitions, or could provide guarantees, and establish responsibilities; it is the result of a balance between values;⁷⁰ should be abstract and generally applicable; should be designed to last over time and, through interpretation, to be able to address its purpose in a changing environment⁷¹.

Thirdly, it has been argued that the automation allowed by the rule as a code creates an overlapping between rule-making and adjudication, with a loss of procedural guarantees at both levels: on the one hand, “rulemaking by code fails to satisfy the notice-and-comment requirement”; on the other hand, automatic adjudication “endanger the basic right to be given notice of an agency’s intended actions”⁷².

⁶⁶ Eva MICHEL and Anna WHALEY, “Regulatory technology: replacing law with computer code”, in *LSE Legal Studies Working Paper*, n. 14, 2018, pp. 1-27 (p. 14-15).

⁶⁷ “As a consequence, the law would be more legislative because it would be the legislature that directly decides the shape of the law, without the need for downstream assistance from judges or administrative bureaucrats” (Michael A. LIVERMORE, “Rules by Rules”, in Ryan WHALEN, *Computational Legal Studies: The Promise and Challenge of Data-Driven Legal Research*, Edward Elgar, 2020, Cheltenham-UK, Northampton-USA, pp. 238-264, p. 252). Moreover, “according to the right to good administration and its legal obligation of due care and due diligence (...) there is a duty to develop discretionary powers considering all the relevant factors of a case and not applying rigid rules in an identical way in different possible situations” (Juli PONCE SOLE, “Some considerations on the relationship between humans and artificial intelligence: the ‘human reserve’ and human supervision (human in/ on the loop)” (draft for the Symposium *Public Administration and the EU Proposal for a Regulation of Artificial Intelligence*, September 18-19, 2023).

⁶⁸ Robert BALDWIN, *Rules and Government*, Clarendon Press, Oxford, 1997, p. 16 ss.; Marco D’ALBERTI, *Pubblici poteri, mercati, globalizzazione*, Il Mulino, Bologna, 2008, p. 99 ss.

⁶⁹ Reuben BINNS, “Human judgment in algorithmic loops: individual justice and automated decision-making”, in *Regulation & Governance*, vol. 16, 2022, p. 197-211.

⁷⁰ “Neither conventional expert systems nor those machine learning systems on the horizon will be in a position to resolve (without human intervention) highly context-specific debates about how society should assess the goal of a regulatory rule or an administrative adjudication” (Mariano-Florentino CUELLAR, “Cyberdelegation and the Administrative State”, in Nicholas R. PARRILLO (ed.), *The Administrative State from the Inside Out. Essays on Themes in the Work of Jerry L. Mashaw*, Oxford University Press, Oxford, pp. 134.169, p. 135).

⁷¹ “The open textured nature of language and law has an important connection to time, since future cases may arise that were unknowable by the drafter of a rule” (Simon CHERSTERMAN, *We, the Robots: Regulating artificial intelligence and the limits of the law*, Cambridge University Press, Cambridge, 2021, p. 233). See also Michael A. LIVERMORE, “Rules by Rules”, cit., p. 247. “Law’s attitude is constructive: it aims, in the interpretative spirit, to lay principle over practice to show the best route to a better future, keeping the right faith with the past” (Ronald DWORKIN, *Law’s Empire*, Harvard University Press, Cambridge-Ma, 1986, p. 413).

⁷² Danielle Keats CITRON, “Technological Due Process”, in *Washington University Law Review*, vol. 85, n. 6, 2008, pp. 1249-1313, p. 1290 and 1281. Several potential reply to that has been elaborated

Fourthly, automatic adjudication opens the door to discriminatory decisions whenever errors⁷³ or biases are embedded in the system⁷⁴, or when the quality of data is poor⁷⁵. Adjudication by AI is challenged by similar risks.

Fifthly, an incorrect interpretation of the law or regulation, as well as an inappropriate translation into the code can challenge the constitutional democracy⁷⁶.

Lastly, the automatic decision-making allowed by the “rule as a code” approach can lead to an erosion of decision-makers expertise⁷⁷.

ted by Michael A. LIVERMORE, *Rules by Rules*, cit., p. 257-260. According to Cary COGLIANESE: “whether any particular algorithmic system will satisfy the standards of due process will depend on how well that system works and on the adequate validation of its performance” (“Regulating by robot. Administrative Decision Making in the Machine-Learning Era”, cit., p. 1191). It has also been argued that rule as code risk leading to “computational legalisms” related to “the sheer speed of code’s execution. (...) Its lack of delay collapses the hermeneutic gap, because not only does text (the source code) constitute both rule and reality, but its application is pre-determined and imposed immediately at the point of execution” (Laurence DIVER, “Computational legalism and the affordance of delay in law”, in *Journal of Cross-disciplinary Research in Computational Law*, 2020, pp. 2-15, p. 6).

⁷³ Mark KELMAN, *The Heuristics Debate*, Oxford University Press, Oxford, 2011, p. 21. On both bias and errors, see Cary COGLIANESE and Alicia LAI, “Algorithm v. Algorithm”, in *Duke Law Journal*, vol. 72, 2022, pp. 1281-1340, p. 1293-1302. “First, a model can simply fail to fit any data — training or test — well. In such a scenario, even if the training and test data were perfectly representative of real-world data, the model would be inaccurate when deployed. Second, an algorithm can fit its training and, perhaps, test data well, but fail to generalize and perform equally well in real-world data” (David LEHR and Paul OHM, “Playing with the Data: What Legal Scholars Should Learn About Machine Learning”, in *University of California*, vol. 51, 2017, pp. 653-717, p. 711).

⁷⁴ Sandra G. Mayson, “Bias In, Bias Out”, in *The Yale Law Journal*, 128, 2019, pp. 2219-2300, p. 2224 footnote 23; Minesh TANNA and William DUNNING, “Bias and discrimination”, in Charles KERRIGAN (ed.), *Artificial intelligence. Law and Regulation*, Edward Elgar, Cheltenham-UK, Northampton-USA, 2022, p. 422-441; Aylin CALISKAN, Joanna J. BRYSON, Arvind NARAYANAN, “Semantics derived automatically from language corpora contain human-like biases”, in *Science*, n. 356, 2017, pp. 183-186; Cathy O’NEIL, *Weapons of math destruction. How Big Data increases inequality and threatens democracy*, Penguin, London, 2016, p. 21; Cass R. SUNSTEIN, “Algorithms, correcting biases”, in *Social Research: An Int. Quart.*, vol. 86, n. 2, 2019, p. 499-511.

⁷⁵ Being collected by subjects who are in a conflict of interests, or extrapolated from assumptions not validated by the person concerned, e.g. when taken from people’ digital footprint or collected for different purposes (Nello CRISTIANINI, “Shortcuts to Artificial Intelligence”, in M. Pelillo and T. Scantaburlo, *Machine we trust. Perspective on dependable AI*, The Mit Press, Cambridge, Massachusetts, London, England, 2021, p. 15-16). Automated decisions in sensitive areas, such as teacher evaluation and social security have already devastated numerous people and prompted litigation in many legal systems. For instance, in 2021 the algorithm *Systeem Risico Indicatie-SyRI* used by the Dutch government to detect various forms of fraud (including social benefits, and taxes) wrongly accused 26,000 families and was judged in breach of article 8 of the European Convention on Human Rights by the Hague District Court. The Michigan Integrated Data Automated System-MiDAS used to interpret small mistakes as signs of unemployment fraud (Sofia RANCHIRDAS, “Empathy in the digital administrative State”, in *Duke Law Journal*, vol. 71, 2022, pp. 1341-1389, p. 1348; see also Alejandro DE LA GARZA, “States’ Automated Systems Are Trapping Citizens in Bureaucratic Nightmares With Their Lives on the Line”, in *Times*, May 28, 2020).

⁷⁶ Mireille HILDEBRANDT, “Code-driven Law: Freezing the Future and Scaling the Past”, cit., p. 83.

⁷⁷ Mariano-Florentino CUELLAR, “Cyberdelegation and the Administrative State”, cit., p. 154; Michael A. LIVERMORE, “Rules by Rules”, cit., p. 261; Mireille HILDEBRANDT, “Law as compu-

A reasonable conclusion from the above is to suggest that legislation and regulations should be written in dual format in selected areas, according to the proportionality principle. On the one hand, designing a syntax suitable for both legal purposes and computer evaluation is not always feasible⁷⁸ or desirable: some rules may indeed be translated into a logical representation (e.g. road traffic laws)⁷⁹; other may not (e.g. principles and the principles-based regulation⁸⁰, or clauses such as “good faith”⁸¹). On the other hand, write rules in dual format requires humans telling the computer what the law says, “and not the other way around”⁸². For the time being, this time-consuming exercise seems hardly compatible with the time pressure and multiple steps characterising the legislative and most, while it could be experimented in some sectorial regulation⁸³.

4. IS THERE A ROOM FOR AI SETTING RULES?

Simple linear algorithms or AI seldom can substitute the sensitive role of law-makers and rule-makers⁸⁴. Nonetheless, they can play a relevant supportive role.

tation in the era of artificial legal intelligence. Speaking law to the power of statistics”, in *University of Toronto Law Journal*, vol. 68, n. 1, 2020, pp. 12-35, p. 33.

⁷⁸ To be sure, “sometimes language may be inherently ambiguous. The statement that ‘I saw the girl with the telescope’ might mean either that the speaker looked through a telescope or that the girl was carrying one” (Simon CHESTERMAN, *We, the Robots: Regulating artificial intelligence and the limits of the law*, Cambridge University Press, Cambridge, 2022, p. 230).

⁷⁹ “Road traffic laws, for example, state that exceeding a given speed limit constitutes an offence. Many jurisdictions use speed cameras that automatically record infringements and issue fines” (Simon CHESTERMAN, *We, the Robots: Regulating artificial intelligence and the limits of the law*, cit., p. 231).

⁸⁰ Robert BALDWIN, Martin CAVE, Martin LODGE, *Understanding regulation. Theory, strategy, and practice*, Oxford University Press, Oxford, second ed., 2012, p. 302-311.

⁸¹ “Terms such as ‘good faith’ or ‘unconscionability’ are notoriously difficult to define in terms that would be useful to a machine” (Simon CHESTERMAN, *We, the Robots: Regulating artificial intelligence and the limits of the law*, cit., p. 231). Moreover, “even if a law appears on its face to be expressed clearly, however – ‘no vehicles in the park’ (...) – how it is to be applied in practice may be less so. We might agree that it covers automobiles, but what about bicycles, roller skates, toy cars?” (Simon CHESTERMAN, *We, the Robots: Regulating artificial intelligence and the limits of the law*, cit., p. 233).

⁸² “Rules as Code is Not Artificial Intelligence”: “as of now there are inadequate examples of one-to-one translations between rules and code to be able to train artificial intelligence to do the translation” (Jason MORRIS, “Rules as Code: How Technology May change the Language in which Legislation is Written, and What it Might Mean for Lawyers of Tomorrow”, cit., p. 14). Therefore, “the much prized overall efficiency benefits may in practice be somewhat modified” (Michael GOTZE, “Political and systematic push for legal pre-accept of AI solutions”, draft for the Symposium *Public Administration and the EU Proposal for a Regulation of Artificial Intelligence*, September 18-19, 2023).

⁸³ For instance, the above mentioned US “Transportation Department’s practice of drafting regulations in a structured format which facilitates better comprehension of rules by computers” (Catherine M. SHARKEY and Cade MALLETT, “Artificial Intelligence for Retrospective Regulatory Review”, cit.).

⁸⁴ “Rules are forward-looking, but they also involve complex normative judgments, not merely predictive ones. Determining the content of rules often requires making difficult choices about the entities to be regulated, the conduct or outcome that the rule tells these entities to achieve or avoid, and the nature and degree of the consequences that follow from adhering or not adhering to the rule’s

Firstly, a law or regulation can delegate an algorithm to set rules. For instance, according to the European regulation, electricity market operators (managing a bidding zone)⁸⁵ use algorithms to set electricity selling prices among electric utilities and to allocate interconnection capacity⁸⁶. During the Covid 19 pandemic, an AI system conducted periodic risk assessments to classify Italian regions or municipalities into a color band to which a different regulation of economic and civil activities corresponded⁸⁷.

Secondly, AI can play a role at a stage that may precede the rule-making or law-making⁸⁸. For instance, decision-makers could use AI to detect compounds⁸⁹ or activities⁹⁰ that should be subject to regulation or to a stricter regulation. A need for new regulation might result from a retrospective review performed through AI (Para. 7). AI might also support them in collecting and processing data from various sources, such as complaints⁹¹ or enforcement activities, which may in turn reveal the need for a regulatory intervention or an updating of existing regulations.

Thirdly, AI can support humans in writing a law or regulation. For instance, translation software can already “render rules in plain language to assist with public understanding and compliance”⁹². In perspective, Large Language Models could “produce a rough but credible first legislative draft”⁹³, or a citizens’ initiative bill. It

commands. Machine-learning algorithms cannot directly make the choices about these different aspects of a rule’s content not only because some of these choices are normative ones, but also because learning algorithms are merely predictive and thus unable to overlay causal interpretations on the relationship between possible regulations and estimated effects” (Cary COGLIANESE and David LEHR, “Regulating by Robot: Administrative Decision Making in the Machine Learning Era”, cit., p. 1173)

⁸⁵ Art. 7, comma 1, Regulation (EU) 2015/1222, establishing a guideline on capacity allocation and congestion management.

⁸⁶ Artt. 36-37, Regulation (EU) 2015/1222, cit.

⁸⁷ Italian Ministry for Health, 30 April 2020.

⁸⁸ Information gathering, in the Karen YEUNG taxonomy (“Algorithmic regulation: A critical interrogation”, in *Regulation & Governance*, vol. 12, 2018, pp. 505-523, p. 507).

⁸⁹ Mariano-Florentino CUELLAR, “Cyberdelegation and the Administrative State”, cit., p. 147.

⁹⁰ The US FDA uses AI techniques for postmarket surveillance to update rules and guidance (David Freeman ENGSTROM, Daniel E. HO, Cathrine M. SHARKEY, Mariano-Florentino CUELLAR, *Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies*, cit., p. 53).

⁹¹ For instance, consumer’ complaints are reorganised by the Bank of Italy through AI (*Regulation on the processing of personal data in the management of complaints from clients*, 30th March 2022).

⁹² Cary COGLIANESE, “E-rulemaking: Information Technology and the Regulatory Process: New Directions in Digital Government Research”, cit., p. 16.

⁹³ Daniel LOVRIC, “The future of legislative drafting”, cit., p. 6. For instance, the US Congress is exploring the following functionalities in legislative process: “generating constituent response drafts and press documents; summarizing large amounts of text in speeches; drafting policy papers or even bills; creating new logos or graphical element for branded office resources and more” (Nihal KRISHAM, “Congress gets 40 ChatGPT Plus licenses to start experimenting with generative AI”, in *Fedscoop*, April 24, 2023, [Congress gets 40 ChatGPT Plus licenses to start experimenting with generative AI | FedScoop](#)); Eric EGAN, “Generative AI Offers Federal Agencies Common-Sense Opportunities to Simplify and Improve How They Work”, in *Information technology and Innovation Foundation*, June 28, 2023 ([Generative AI Offers Federal Agencies Common-Sense Opportunities to Simplify and Improve How They Work | ITIF](#)).

could also translate comments received in a consultation into a text that could be referred to Parliament for discussion⁹⁴.

These examples raise some concerns.

First, LLM producing a draft or translating comment in a text can challenge representative democracy whether application goes beyond the mere support to decision-makers (e.g., processing large quantity of data, selecting words or proposition) and make political choices⁹⁵.

Second, AI can hinder the guarantee of participation in rule-making; in the electricity market and Covid examples, although the rule-making establishing the role of the algorithm was (in theory) open to stakeholders participation, the automatic rule-setting clearly excluded any stakeholder involvement⁹⁶.

Third, AI can lower the quality of information available to decision-makers;⁹⁷ in the example of AI used at a stage that might precede regulation, an inadequate design of the algorithm can lead reports or complaints to receive less attention because of spelling mistakes or jargon⁹⁸.

Lastly, there is a risk that decision-makers assume that the human drafter is becoming redundant, while “the kind of drafts that an AI system could produce would likely be very rough and contain fundamental flaws”⁹⁹.

To conclude, humans would always be needed to supervise and integrate the AI produced text. Moreover, “humans must specify the targets, commands, and consequences of potential rules from which an embedded machine-learning system might choose the best. More importantly, humans can, at any time, choose to reject a machine-chosen rule, alter an algorithm’s specifications, or even “pull the plug” on the system entirely”¹⁰⁰.

5. AI FOR CONSULTATIONS

The rise of rule-making digitization twenty years ago appeared as a turning point, both in lowering regulators’ costs and increasing stakeholders’ engagement¹⁰¹ (thus

⁹⁴ Laura TAFANI, “A Legislative Drafter’s Perspective”, in *ChatGPT series*, cit.

⁹⁵ Laura TAFANI, “A Legislative Drafter’s Perspective”, in *ChatGPT series*, cit.

⁹⁶ It is therefore crucial that the consultation launched in the rule-making clearly disclose the use of AI, the reason why, as well as the related risks.

⁹⁷ Aram A. GAVOOR, “The Impending Judicial Regulation of Artificial Intelligence in the Administrative State”, in *Notre Dame Law Review Reflection*, vol. 97, 2022, pp. 197-206, p. 180 ss.

⁹⁸ Sidney A. SHAPIRO, “Marginalized Groups and the Multiple Languages of Regulatory Decision-Making”, in *The Regulatory Review*, 14 March 2022.

⁹⁹ Daniel LOVRIC, “The future of legislative drafting”, cit., p. 6.

¹⁰⁰ Cary COGLIANESE and David LEHR, “Regulating by Robot: Administrative Decision Making in the Machine Learning Era, cit.”, p. 1181.

¹⁰¹ Cary COGLIANESE, “E-rulemaking Information Technology and Regulatory Policy”, cit., p. 355.

improving trust and the effectiveness of laws). Hopes were only partially fulfilled. On the one hand, the exponential increase in participation challenged the ability of regulators to manage the large amount of comments received and allowed the emergence of the mass comment phenomenon. On the other hand, the mechanism of e-notice and comment raised the participation of the better-organized firms, but not of citizens and micro firms, whose lack of inclusiveness hinder the quality of information available, thus the quality of rules enacted.

The digitization itself offered some important answers to the first problem, by providing application to analyze huge amounts of comments (such as Data Oriented Services-DORIS+¹⁰² or Compositional Data Analysis-CoDa used by the European Commission). Moreover, AI provides new tools to help decision-makers in reorganizing and analysing comments collected in consultations with extremely high participation rates¹⁰³ (e.g., text categorization of public comments¹⁰⁴, identification of duplicates, and summarization of overall comment sentiment). AI not only allows a significant time saving¹⁰⁵, but also prevents decision-makers being affected by information overload bias, which could impede an adequate the assessment of comments¹⁰⁶. However, AI in consultation does not come without risks, since an inadequate design of the algorithm could compromise the guarantees of participation and the quality of information available¹⁰⁷. For instance, these outcome can occur if comments provided in mass campaign are automatically de-quoted¹⁰⁸, excluded,

¹⁰² “Nowadays DORIS can process results of surveys coming from EUSurvey and Better Regulation Portal. It allows users to analyze data from open and closed questions, and offers a dashboard through which users can visualize the results of the analysis” (About DORIS+ | Joinup (europa.eu)).

¹⁰³ “Agencies can use advanced computational techniques to respond to the challenges of the era of mass commenting, specifically by identifying the most substantive comments that require more sustained attention and by aggregating and analyzing comments to identify emergent content that is only apparent when comments are understood in relationship to each other and not simply read as individual, atomized responses to a regulatory proposal” (Michael A. LIVERMORE, Vladimir EIDELMAN, Brian GROM, “Computationally Assisted Regulatory Participation”, in *Notre Dame Law Review*, vol. 93, n. 3, 2018, pp. 977-1034, p. 1034).

¹⁰⁴ This functionality has been identified by Cary COGLIANESE (“E-rulemaking Information Technology and Regulatory Policy”, cit.) already in 2004. For instance, CitizenLab (a Belgian supporting governments around the world) uses NLP technique, with the capacity to automatically classify and analyse thousands of contributions collected on citizen participation platforms, to identify the main topics and group similar ideas together into clusters (European Commission, JRC, *Selected AI cases in the public sector*, cit., and <https://www.citizenlab.co/platform-online-engagement-toolbox>).

¹⁰⁵ David Freeman ENGSTROM, Daniel E. HO, Cathrine M. SHARKEY, Mariano-Florentino CUELLAR, *Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies*, cit., p. 60.

¹⁰⁶ Nicoletta RANGONE, “Improving consultation to ensure the European Union’s democratic legitimacy: From traditional procedural requirements to behavioural insights”, in *European Law Journal*, vol. 28, n. 4-6, 2022, p. 154-171.

¹⁰⁷ “The act of reading comment grouped as “for” or “against” (or no position) may also impact the agency factfinder in the presentation of the information she is assimilating” (Melissa MORTAZAVI, “Rulemaking Ex Machina”, in *Columbia Law Review*, vol. 117, n. 6, 2017).

¹⁰⁸ Steven J. BALLA, Alexander R. BECK, Elisabeth MEEHAN, Arymal Prasad, “Lost in the flood?: Agency responsiveness to mass comment campaigns in administrative rulemaking”, in *Regula-*

or considered as a single one;¹⁰⁹ as well as if comments which “are not expressed using the standard narrative of policy making” are ignored or devaluated¹¹⁰. The robustness of the result depends also on the adequacy of the techniques deployed to assess data¹¹¹.

The second problem of the limited participation of citizens and small firms is still an issue, due to the lack of digital literacy and motivation. Even when some overcome these barriers, their contributions lack the format (the narrative) to be taken seriously. There is no single answer to tackle the lack of inclusiveness, but one is definitively to use language and consultation techniques appropriate to the target audience¹¹². Against the current reference to standard categories of stakeholders to be involved, AI could provide decision-makers with a precise identification of stakeholder groups interested in a consultation proceedings¹¹³, which in turn would enable regulators to address different stakeholders by diverse and adequate means (e.g. seminars and community listening sessions during comment periods to facilitate citizens’ participation).

New advancements in AI, such as LLM, can also help in overcoming the lack of inclusiveness by transforming the citizens’ narrative into technical language that

tion & Governance, 2020.

¹⁰⁹ To tackle this challenge, the European Commission (*Better Regulation Toolbox*, 2021, p. 472 ff.) and the European Court of Auditors (*‘Have your say!’: Commission public consultations engage citizens, but fall short of outreach activities*, special report n. 14/2019, 39-40) suggest analyzing campaigns separately. In the United States, the discussion of the role to be attributed to mass comments is divisive, with most observers arguing the uselessness if not the harmfulness of these comments (Comment to ACUS from Senior Fellow R.J. Pierce on Mass Comments, Computer-Generated Comments and Fraudulent Comments, May 22, 2021), with notable exceptions emphasizing their value (Michael HERZ, “Malattributed comments in agency rule-making”, in *Cardozo Law Review*, in vol. 42, 2020, pp. 1-67; Nina A. MENDELSON, “On the Value of Comments from Individual Members of the Public (ACUS Update)”, in *Notice and Comment. A Blog from Yale Journal of Regulation*, July 14, 2021, <https://www.yalejreg.com/nc/nina-a-mendelson-on-the-value-of-comments-from-individual-members-of-the-public/>). Among the latter, it has been underlined that “the Executive Order [14094/2023, Modernizing the regulatory review] also includes a placeholder indicating the need for OIRA to develop “guidance or tools” to handle the large volumes of individual comments submitted through *Regulations.gov* on certain high-visibility agency rules. As OIRA addresses this issue, OIRA should recognize, critically, that these comments, as with targeted community outreach, can represent important sources of both “data,” including local information or situated knowledge, and “views,” in the words of the APA. The vaguely pejorative term “mass comments” perhaps could also be upgraded to “large-volume individual comments” (Nina A. MENDELSON, “Public Engagement, Equity, and Executive Order 14094”, Symposium on Modernizing Regulatory Review, June 7, 2023).

¹¹⁰ Sidney A. SHAPIRO, “Marginalized Groups and the Multiple Languages of Regulatory Decision-Making”, cit.

¹¹¹ David Freeman ENGSTROM, Daniel E. HO, Cathrine M. SHARKEY, Mariano-Florentino CUELLAR, *Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies*, cit., p. 61.

¹¹² Nicoletta RANGONE, “Improving consultation to ensure the European Union’s democratic legitimacy: From traditional procedural requirements to behavioural insights”, cit.

¹¹³ Fabiana DI PORTO, Paolo FANTOZZI, Maurizio NALDI, Nicoletta RANGONE, “Identifying stakeholders’ interests in EU consultations through a text mining approach”, forthcoming.

is more likely to be considered by the regulators¹¹⁴. However, the same tools can make it extremely easy for a large quantity of comments by the private sector to be produced¹¹⁵, leading to mass campaigns being almost impossible to identify¹¹⁶, and challenging the ability of decision-makers to assess all documents received and “threaten to weaken the signal those words provide”¹¹⁷.

The examples and remarks in this paragraph show that AI is a valuable support to decision-makers and an empowerment tool to prevent information overload bias¹¹⁸, as well as in tackling the inclusiveness of “missed stakeholders”¹¹⁹. However, AI couldn’t supplant the sensitive public comment review task¹²⁰ (the risk being a break to the right to participate in decision-making), nor is it a decisive answer to inclusiveness.

6. WHAT DIGITALISATION AND AI CAN DO FOR IMPACT ASSESSMENT?

Impact assessment (IA) is a systematic and comparative appraisal of how proposed rules will affect stakeholders, regulators, economic sectors, and the environment. It aims at identifying in advance all the intended and unintended consequences of feasible regulatory options, in order to allow evidence-based legislation and regulation. In this exercise, digitalisation¹²¹ and the interconnection of public datasets¹²² are crucial in improving the analytical basis for regulatory choices.

¹¹⁴ Bridget C.E DOOLING and Mark FEBRIZIO, “Robotic rulemaking”, in *Brookings series on Regulatory Process and Perspectives*, April 4, 2023, [Robotic rulemaking \(brookings.edu\)](https://www.brookings.edu/robotic-rulemaking/) accessed June 20, 2023. With the same purpose of getting people involved in rulemaking, an app could inform people interested in a particular topic (using social media to infer the individual’s interests) that it is the subject of a proposed rule ([Bot-generated comments on regulatory proposals could be useful. \(slate.com\)](https://www.slate.com/bot-generated-comments-on-regulatory-proposals/), accessed June 20, 2023).

¹¹⁵ Bridget C.E DOOLING and Mark FEBRIZIO, “Robotic rulemaking”, cit.

¹¹⁶ Bridget C.E DOOLING and Mark FEBRIZIO, “Robotic rulemaking”, cit.

¹¹⁷ Sarah KREPS and Douglas KRINER, “How generative Artificial Intelligence impact democratic engagement”, March 21, 2023, in *How generative AI impacts g engagement | Brookings*.

¹¹⁸ For instance, a platform for the automatic analysis of linguistic data, which works through AI techniques of semantic analysis and modules for the automatic processing of natural language, was used by the Italian Ministry of Education to analyze 270 thousand comments received in the public consultation launched in 2014 on the so-called “La buona scuola” policy ([Collaboration with MIUR | Digital Humanities group @ FBK](https://www.miur.gov.it/collaboration-with-miur-digital-humanities-group-at-fbk/), in JRC, *Selected AI cases in the public sector*, 2021, cit.).

¹¹⁹ The so-called “missing stakeholders” are “those directly affected by the proposed rule who are historically unlikely to participate in the traditional comment process” (Administrative Conference of the United States, *Adoption of Recommendations and Statement Regarding Administrative Practice and Procedure*, *Federal Register* 76269, vol. 78, n. 242/2013, 76271).

¹²⁰ Melissa MORTAZAVI, *Rulemaking Ex Machina*, cit., 2017.

¹²¹ Cary COGLIANESE, “E-rulemaking Information Technology and Regulatory Policy”, cit., p. 395.

¹²² Eric EGAN, “Generative AI Offers Federal Agencies Common-Sense Opportunities to Simplify and Improve How They Work”, cit.

Due to its predictive nature, a variant of this tool is currently being promoted by some scholars and institutions in order to identify the impact of AI applications in advance¹²³. Besides IA of AI, what AI can do for IA?

In order to answer this question, two characteristics of IA are decisive.

First: IA is not a mere technical exercise and it requires a broad approach and policy coherence, as well as a multidisciplinary view of the problem¹²⁴ and of the regulatory options to address it.

Second: IA is part of the motivation of the final law or regulation, whether or not legislators/regulators follow the IA outcome. In order to fulfill this supportive role, the data used in the IA should be transparent and the identified impacts need to be explainable and replicable; therefore, IA should provide causal connections rather than just identify correlation¹²⁵.

Third: in the IA activity, one size does not fit all, and the depth of the assessment should be proportional to the issue at stake, its potential impact and resources available. For instance, is up to humans to identify the proportionate level of analysis which each case deserves (e.g. whether a cost-benefit or multicriteria analysis should be used, or the number of consultations to be carried out), or to establish what measure is preferable overall (e.g., in multicriteria analysis, whether a measure protects the environment or jobs, but could have a negative impact on competition).

Due to these characteristics, it is unlikely that AI can replace humans in IA. Nevertheless, AI could certainly play a supportive role in IA, while at the moment it is of very limited application, to the best of our knowledge¹²⁶.

AI delivers some potential explored by studies devoted to AI in the administrative and the judiciary function.

Firstly, less staff and time is required in proceedings leveraging on AI¹²⁷.

¹²³ “The idea to apply an impact assessment approach to AI has been proposed in the academic literature (Calvo et al. 2020; Stix 2021) and has found resonance in national policy (UK AI Council 2021) international bodies, such as the European Data Protection Supervisor (EDPS) (2020), the European Fundamental Rights Agency (FRA) (2020) and UNESCO (2020)” (Bernd Carsten STAHL, Josephina ANTONIOU, Nikita BHALLA *et al.*, “A systematic review of artificial intelligence impact assessments”, in *Artificial Intelligence Review*, 2023). See also Andrew D. SELBST, *An institutional view of algorithmic Impact Assessment*, in *Harvard Journal of Law & Technology*, vol. 35, n. 1, 2021, p. 117-191.

¹²⁴ Regulatory Scrutiny Board, *Annual report 2022*, Publication Office of the European Commission, 2023, p. 19.

¹²⁵ Besides transparency problem, correlation can lead to statistical hallucinations and have a conservative tendency (Juli PONCE SOLE, “Some considerations on the relationship between humans and artificial intelligence: the “human reserve” and human supervision (human in/on the loop)”, *cit.*).

¹²⁶ The Portuguese Technical Unit for Impact Assessment is currently developing a pilot-project for an AI tool to support IA with regard to the identification of administrative obligations and estimation of related administrative burdens (the IA²AI project described by OECD, *Regulatory databases and analytical tools to support regulatory analysis*, forthcoming).

¹²⁷ On the support of judicial function, see Zichun XU, “Human Judges in the Era of Artificial Intelligence: Challenges and Opportunities”, in *Applied Artificial Intelligence*, vol. 36, n. 1, 2022).

Secondly, an increased access to a knowledge base that would not otherwise be attainable can address limited data availability constraints, which is a common issue for IA around the world¹²⁸. On the one hand, “language processing tools could analyze a proposed rule to determine its subject matter area, then crawl through related academic research to find and submit relevant scientific studies to the agency”¹²⁹. On the other hand, AI can help in analyzing public dataset¹³⁰. For instance, the Italian national statistical institute-ISTAT delivered a platform (IstatData)¹³¹ enabling natural language-based searches on datasets contained in its archives and provides the most interesting and relevant answers from certified data¹³².

AI could also provide support specific to IA activities.

Firstly, AI could identify the relevant regulatory framework interested by the proposal and show if a regulatory option is redundant or incompatible with existing regulations¹³³.

Secondly, when (if ever) rules are written as code, AI allows the automatic testing of the impact of new proposals or amendments, thus improving the ability to forecast whether a regulatory option actually can reach the expected outcomes¹³⁴.

Thirdly, AI can support the identification of administrative obligations introduced by the regulatory options, the administrative tasks per obligation and the estimation of their cost for end-users. In reality, these tasks do not require AI, being easily accomplished by humans (who identify the administrative burdens and related

¹²⁸ With regard to the European Commission IAs, “the Board acknowledges that the assessment of impacts can be constrained by limited data availability and raise analytical challenges” (Regulatory Scrutiny Board, *Annual report 2022*, cit., p. 17).

¹²⁹ [Bot-generated comments on regulatory proposals could be useful. \(slate.com\)](#)

¹³⁰ Eric EGAN, “Generative AI Offers Federal Agencies Common-Sense Opportunities to Simplify and Improve How They Work”, cit.

¹³¹ <https://esploradati.istat.it/databrowser/#/it/dw/dashboards>

¹³² ISTAT, *Relazione al Parlamento sulle attività dell’Istat e degli uffici del sistema statistico nazionale e stato di attuazione del programma statistico nazionale (art. 24, D. Lgs. n. 322 del 1989) - anno 2022*, 2023, pp. 69 e ss.

¹³³ The US Centers for Medicare & Medicaid Services-CMS is exploring the use of AI for prospective and retrospective analysis (Cathrine M. SHARKEY, *Algorithmic tools in retrospective review of agency rules*, Report for the Administrative Conference of the United States, May 3, 2023, p. 33).

¹³⁴ “Computer systems can generate random fact scenarios, enter those fact scenarios into the rules, and calculate the consequences. Those consequences can then be compared to expected outcomes. For example, a proposed amendment to a piece of tax legislation might be intended not to increase anyone’s taxes. You can specify a fact scenario, and the taxes owing that you expect before and after the change, and determine whether or not it has the expected effect. But you can also state generally that no outcome should result in increased taxes, and have the computer randomly generate any number of fact scenarios and test them to see if that condition is ever violated. (...) The development of OpenFisca [an open source library for the Python programming language] and its use in the LexImpact tool [by the National Assembly] for analyzing the impact of amendments to French tax law are the most direct real-world example of the use of Rule as Code today” (Jason MORRIS, “Rules as Code: How Technology May change the Language in which Legislation is Written, and What it Might Mean for Lawyers of Tomorrow”, cit., p. 5, 7-8).

activities), supported by a standard cost model-SCM calculator (in order to quantify their total annual cost).

A precondition for the fulfillment of the above-mentioned potentials of AI for IA is data quality and availability. On the one hand, public databases on critical data for IA should be easily accessible to decision-makers (e.g., inventories of business acting in a given sector, or regulatory compliance cost derived from previous reduction programs). On the other hand, these data should be “contextualized”, so that decision-makers can be aware of the purpose of their collection and thus interpret them for regulatory purposes¹³⁵.

A last point to be considered when AI is used for IA is that the latter is forward looking, while the former leverages mainly on historical data, thus risks leading to an under-evaluation of new entrants and new risks¹³⁶ and supporting the wrong assumption that people’s behaviour is always consistent¹³⁷.

7. AI AND THE REGULATORY STOCK REVIEW

AI can dramatically improve the traditional labour-intensive *ex post* evaluations¹³⁸. AI supports retrospective review of existing law and regulations by identifying outdated or redundant rules, overlapping among regulatory areas¹³⁹, “typographical errors or inaccurate cross-reference”; rules that “might benefit from elaboration or clarification”¹⁴⁰. AI can also facilitate retrospective review aimed at identifying

¹³⁵ OECD, *Regulatory databases and analytical tools to support regulatory analysis*, cit., p. 4.

¹³⁶ Robert BALDWIN and Julia BLACK, “Really Responsive Risk-Based Regulation”, in *Law & Policy*, vol. 32, n. 2, 2010, pp. 181-213, p. 205-206.

¹³⁷ “The radical uncertainty of the future is exacerbated by the fact that predictions impact the behaviour they supposedly predict (Mireille HILDEBRANDT, “Code-driven Law: Freezing the Future and Scaling the Past”, cit., p. 73). In addition, people may react strategically to elude detection (David Freeman ENGSTROM, Daniel E. HO, Cathrine M. SHARKEY, Mariano-Florentino CUELLAR, *Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies*, cit., p. 86 ff.). In the field of justice, this implies that judgments crystallizes the past to the detriment, among other things, of the system evolution (Luisa TORCHIA, “La giustizia amministrativa digitale”, in Margherita RAMAJOLI (ed.), *Una giustizia amministrativa digitale?*, Il Mulino, Bologna, 2023, pp. 39-58, p. 55).

¹³⁸ Administrative Conference of the United States, *Using algorithmic tools in retrospective review of agency rules*, Recommendation, June 27, 2023.

¹³⁹ For instance, neural network are used to create topic cluster of the US Code of Federal Regulation (Daniel BYLER, Beth FLORES, Jason LEWRIS, “Using advanced analytics to drive regulatory reform”, Deloitte, 2017 (<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-ps-using-advanced-analytics-to-drive-regulatory-reform.pdf>)).

¹⁴⁰ Cathrine M. SHARKEY, “Algorithmic tools in retrospective review of agency rules”, cit., p. 3. RegData (a quantitative dataset developed by The Mercatus Center researchers at George Mason University) uses two metrics to compare regulatory complexity: sentence length and the frequency of new ideas identified by the Shannon entropy (i.e., a system measuring “the frequency of new ideas introduced in documents, with simpler and more focused documents having a lower entropy score”). Patrick A. McLAUGHLIN, “RegData Canada: A Data-Driven Approach to Regulatory Reform”, in *Mercatus Center, George Mason University, Policy Brief*, 2019, pp. 1-5, (p. 4-5). The US Department

regulatory restrictions¹⁴¹, or regulatory stock in need of adaptation to a changing context. Further potential application can also be envisioned, such as using case law data to identify rules whose compliance is resisted.

AI is therefore useful in signalling where there is potential to improve regulation and it avoids the classical problem of the regulators who have promoted a rule being in charge of its revision or suppression¹⁴² (confirmation bias).

However, AI might also lead to false-positive output, if set out without taking into consideration the complex nature of the legal system. Take for instance an algorithm that counts obligations, without considering at the same time even lifting, limiting, or dispensing with obligations¹⁴³. Moreover, a de-regulatory or pro-regulatory approach (of the developer or of the regulator commissioning the system) might deeply affect the functioning of the algorithm. This proves particularly dangerous because when an AI system performs reviews, the consultation that could counter-balance these results does not take place¹⁴⁴.

Therefore, it is crucial that AI plays a supportive role in regulatory review. Human intervention (lawyers in cooperation with computer scientists) is crucial in setting the

of Transportation elaborated a dashboard (which incorporated an open-source platform developed by Mercatus Center) which employs machine learning to quantify regulatory load (count of restrictions, word count, regulatory complexity via Shannon entropy, conditional count, sentence length, last update). Cathrine M. SHARKEY, “Algorithmic tools in retrospective review of agency rules”, cit., p. 13.

¹⁴¹ RegData qualify regulatory restrictions as words and phrases that indicate specific obligations or prohibitions, counting words and phrases such as shall, may not, must, required, and prohibited (Patrick A. McLAUGHLIN, “RegData Canada: A Data-Driven Approach to Regulatory Reform”, cit., p. 2). In addition, machine-learning text-classification was used to predict industries primarily affected by each obligation (Omar AL-UBAYDLI and Patrick McLAUGHLIN, “RegData: A Numerical Database on Industry-Specific Regulations for All United States Industries and Federal Regulations, 1997-2012”, in *Regulation and Governance*, vol. 11, n. 1, 2017, pp. 109-123).

¹⁴² Cathrine M. SHARKEY, “AI for retrospective review”, in *Belmont Law Review*, vol. 8, 2021, footnote 73, pp. 374-408 (p. 390).

¹⁴³ Cary COGLIANESE, Gabriel SCHEFFLER and Daniel WALTERS have “replicated the methods underlying RegData and also adapted and expanded them to the task of measuring unrules based on a dictionary of five comparable obligation-alleviating terms: waive, exclude, except, exempt, and variance. (...) [They] used computerized computational techniques to search for both obligation imposing and obligation-alleviating terms throughout the Federal Register and the CFR, as well as in the United States Code” (“Unrules”, in *Stanford Law Review*, 2021, pp. 885-967, p. 921-922).

¹⁴⁴ In 2019, the US Department for Health and Human Services-HHS launched a pilot project called “AI for deregulation. In the Notice of Proposed Rulemaking, “Securing Updated and Necessary Statutory Evaluations Timely” (85 Fed. Reg. 70096, 70111, Nov. 4, 2020) the agency “explicitly noted that AI augmented human insights to identify “potential reform opportunities.” HHS’s pilot project formed the basis, at least in part, for the new proposed rule. Here—and in its earlier rule—HHS disclosed that AI was used to help identify “outmoded” regulations, but there is nary a detail regarding how the AI worked or was used in the process. (...) But HHS’s “Regulatory Clean Up Initiative” rule was not subject to the notice-and-comment process. The rule, moreover, offered only the most general description of the AI-driven NLP techniques used” (Cathrine M. SHARKEY, “AI for retrospective review”, cit., p. 404 and 378; see also Cathrine M. SHARKEY, “Algorithmic tools in retrospective review of agency rules”, cit.).

algorithm with regard to what it is intended to look at (e.g., what counts as restriction or linguistic complexity), and what it means (e.g., unnecessary administrative burdens or justified provisions). Moreover, ensuring accuracy of rule interpretation in encoding rules is crucial both for decision-makers and regulated entities which increasingly embrace rules as a code in their compliance tasks¹⁴⁵. These decisions should be made transparent, along with “information about the training data, the process for classifying subtopics, how the clustering algorithm works and with what accuracy”¹⁴⁶. Human intervention is also crucial in interpreting and monitoring AI-based output, since human-machine collaboration is based on ongoing fine-tuning.

8. THE NEED FOR A TAILORED AND AGILE FRAMEWORK FOR AI IN THE LIFE-CYCLE OF RULES

The analysis showed that AI has the power to play a crucial role in life-cycle of rules, by performing time-consuming tasks, increasing access to a knowledge base that would not otherwise be attainable, as well as enhancing the ability of institutions to draft effective rules and to declutter the regulatory stock.

However, the AI revolution is not without risks. It may hinder the guarantees of participation or discriminate stakeholders taking part in consultation and compromise the quality of information available to decision-makers; it may decrease human autonomy or make political choices, thus challenging the democratic representation; it might be biased for or against a de-regulatory or pro-regulatory approach, and so on. In order to contribute in achieving law effectiveness while limiting the risks, AI should play an enabling and *supportive role* to human intervention, which should remain pivotal. Otherwise, applications of AI that surreptitiously dictate the content of rules or *de facto* restrict the right to be heard challenge the separation of powers and the rule of law, thus questioning the very legitimacy of rules.

However, it is not obvious how to set and police the line between human and the machine, due to possible over-reliance or aversion to AI¹⁴⁷, as well as to cognitive bias¹⁴⁸, thus leading to ineffectiveness of human intervention. It is therefore neces-

¹⁴⁵ If a rule states “one week”, the programmer “may ask for a legal interpretation of what “week” means in that context” (“does a week begin on January 1, and a new week start every 7 days? Does a week begin on Sunday? Does it begin on Monday? If a week starts on January 28, what fiscal year is it a part of?”) (Jason MORRIS, “Rules as Code: How Technology May change the Language in which Legislation is Written, and What it Might Mean for Lawyers of Tomorrow”, cit., p. 3).

¹⁴⁶ Cathrine M. SHARKEY, “AI for retrospective review”, cit., p. 407.

¹⁴⁷ Mariano-Florentino CUELLAR, “Cyberdelegation and the Administrative State”, cit., 2017, p. 154 and 156); Gabriele BUCHHOLTZ, “Artificial intelligence and legal tech: challenges to the rule of law”, in Thomas WISCHMEYER, Timo RADEMACHER, *Regulating artificial intelligence*, Springer International Publishing, 2020, pp. 175-198 (p. 193).

¹⁴⁸ Among the bias that may play a role are: automation bias (Linda J. SKITKA et al., “Automation Bias and Errors: Are Crews Better Than Individuals?”, in *The International Journal of Aviation Psychology*, 2000, vol. 10, n. 1, pp. 85-97; Kathleen L. MOSIER and Linda J. SKITKA, “Automation Bias: De-

sary to devise the complimentary and supportive role already at the level of algorithm setting, in addition to an ex post human control. In this purpose, the collaboration of computer scientists and lawyers is crucial not only “to ensure that computer architectures incorporate fundamental safeguards against bias, invasion of privacy”, or unreliable assessments¹⁴⁹ but also to clearly identify what the AI tasks are, and what the role of humans is. For instance, if AI identifies overlapping rules, it is up to the regulator or lawmaker to suggest whether the previous rule should be repealed (since when a rule intervenes over an already regulated matter, complete overlap is unlikely, and repeal always requires substantive evaluation)¹⁵⁰. In impact assessment, humans should instruct AI how to balance advantages with disadvantages, or how to value sensitive factors (such as human life, or air quality)¹⁵¹. Moreover, the system must allow complete human control of the analysis. For instance, a final step should allow humans to review the cost benefit-analysis of a proposed rule to update the standard cost of a particular administrative burden, or to minimize the negative impact of a proposed rule on SMEs, as well as to change its inadequate approach to gender equality.

As the use of AI in parliamentary and regulatory processes increase and the EU existing norms or those that are in the process of being approved at EU level do not tackle AI for legislation or regulation as such¹⁵², it is necessary to establish a national power-conferring legislation framing the use of AI in regulation¹⁵³.

cision Making and Performance in High-Tech Cockpits”, in *International Journal of Aviation Psychology*, 1997, n. 8, vol. 1, p. 47-63; Kate GODDARD, Abdul ROUDSARI, Jeremy C. WYATT, “Automation bias: a systematic review of frequency, effect mediators, and mitigators”, in *J. Am. Med. Inform. Assoc.*, 2012, vol. 19, pp. 121-127; David LEHR and Paul OHOM, “Playing with the Data: What Legal Scholars Should Learn About Machine Learning”, in *University of California*, vol. 51, 2017, pp. 653-717, p. 716; algorithm aversion (Berkeley J. DIEVORST, Joseph P. SIMMONS, Cade MASSEY, “Algorithm aversion: People erroneously avoid algorithms after seeing them err”, in *Journal of Experimental Psychology: General*, vol. 144, n. 1, 2015, pp. 114-126); illusion of validity (Amos TVERSKY and Daniel KAHNEMAN, “Judgment under Uncertainty: Heuristics and Biases”, in *Science*, vol. 185, n. 4157, 1974, pp. 1124-1131, p. 1126; Daniel KAHNEMAN and Gary KLEIN, “Conditions for Intuitive Expertise. A Failure to Disagree”, in *American Psychologist*, 2009, pp. 515-526, p. 517); confirmation bias (Charles G. LORD and Cheryl TAYLOR, “Biased Assimilation: Effects of Assumptions and Expectations on the Interpretation of New Evidence”, in *Social and Personality Psychology Compass*, 2009, n. 3, pp. 827-841; Eyal ZAMIR and Doron TEICHMAN, *Behavioural law and economics*, Oxford University Press, Oxford, 2018, p. 399). On the impact of anchoring in sentencing disparities, see Birthe ENOUGH and Thomas MUSSWEILER, “Sentencing under Uncertainty: Anchoring Effects in the Courtroom”, in *Journal of Applied Social Psychology*, 31, 2001, pp. 1535-1551.

¹⁴⁹ Mireille HILDEBRANDT, “Code-driven Law: Freezing the Future and Scaling the Past”, cit., p. 83.

¹⁵⁰ In the same vein, in the exercise of encoding regulation, it is to humans to clarify what “a week”, or “the majority of the year means” (see footnote n. 145).

¹⁵¹ OECD, *Regulatory databases and analytical tools to support regulatory analysis*, cit., p. 27.

¹⁵² Current privacy regulation requires public authorities to ensure transparency on the existence of automated decision-making only if it involves the processing of personal data (art. 12, para. 1, Regulation n. 2016/679/UE). As per the EU proposal of AI regulation, the automated adjudication allowed by rule as a code in sensitive areas (such as social security and teacher evaluation) are examples of high-risk applications, and human intervention should be ensured, among other guarantees. However, the

Footnote 153 in next page.

This legislation should set the guiding principles, not unlike those outlined for the administrative and judicial functions: complementary role of humans and AI (human in the loop), transparency¹⁵⁴, explainability¹⁵⁵, data governance, and security¹⁵⁶. Each regulator should then adapt these principles to its own activity. These regulations should also set minimum procurement conditions which a third-party vendor should follow (when the preferable¹⁵⁷ in-house solution does not prove to be viable), in order to be in line to the above-mentioned principles¹⁵⁸, and to avoid a *de facto* delegation of legislative or regulatory power to a third party provider.

proposal does not set a discipline for AI in rule-making and law-making based on “narrow AI applications” (i.e., trained on specific data for a specific task and content). Nevertheless, it could be argued that AI in rule life-cycle might be classified as high-risk systems if it is likely to produce adverse impacts on fundamental rights, such as the right to non-discrimination or the right to be heard as a component of the right to a good administration (see the example of AI excluding comments characterized by informal narrative, or resulting from a mass campaign in Para. 5). Moreover, recent amendments to the proposal take into account foundation models, specifying as they might fall under the high-risk category based on their use or purpose in development only. However, foundation models shall respect similar obligations. For instance, deployers who are public authorities shall comply with registration obligations, and with transparency requirements. Additionally, foundation models intended to work as “generative AI” (e.g. LLM supporting rules drafting, rule setting, and consultation) shall: i) comply with specific transparency obligations, ii) be trained, designed, and developed to ensure adequate safeguards and without prejudice to fundamental rights; and iii) be publicly available through a sufficiently detailed summary of the use of training data. On human oversight, the latter is added as a general principle applicable to all AI systems, but explicitly detailed for high-risk systems, while not mentioned in obligations of the providers of a foundation model.

¹⁵³ Stefano CIVITARESE MATTEUCCI, “Public Administration Algorithm Decision-Making and the Rule of Law”, in *European Public Law*, vol. 27, n. 1, 2021, pp. 103-129 (p. 104).

¹⁵⁴ Cary COGLIANESE and David LEHR, “Transparency and algorithmic governance”, cit.

¹⁵⁵ “The administrative state is about translation – from expert knowledge and legal authority discourses to a conversation that allows at least somewhat more public deliberation. A key question is what happens to that process when automated systems have an ever more prominent role in the administrative state, and their capacity to explain their decisions implicates at best a big principal agent problem and at worst is limited given their very architecture and ability to encourage decisions that humans would not have otherwise made” (Mariano-Florentino CUELLAR, “Cyberdelegation and the Administrative State”, cit., p. 156-157).

¹⁵⁶ On the accountability and security issues specific to Parliaments, see World e-Parliament Report 2020, cit., p. 56. Concerning regulation, see Mariano-Florentino CUELLAR, “Cyberdelegation and the Administrative State”, cit., p. 153.

¹⁵⁷ The critical role of AI handling a key public function and leveraging of sensitive data suggests an in-house development. It would also allow a better tailoring of AI to the needs of legislators and regulators, as well as to make it easy to explain its functioning and output. Moreover, AI should be developed with open-source standards, so as to be easily shared with public authorities acting in the same phase of the rule life-cycle (e.g. the EC LEOS for legislation drafting and DORIS for consultation, as well as “GISA Self-assessment” developed by the Campania Italian Region for law enforcement). A more nuanced approach is suggested by the Administrative Conference of the United States, *Using algorithmic tools in retrospective review of agency rules*, cit., point 2 (see also Administrative Conference of the United States, *Agency use of artificial intelligence*, Recommendation, December 31, 2021, point 4).

¹⁵⁸ According to Cary COGLIANESE and Erik LAMPMANN (“Contracting for algorithmic accountability”, in *Public law and legal theory research paper series*, Research paper n. 21-20, 2021), these minimum conditions should be identified by contract, with the advantage of a flexible framework that administration can adequate overtime, when necessary. On the contractual preconditions for acquiring

As per the legislative function, parliaments should enact regulations (or soft regulation) for AI driven legislation, tailoring these principles to the peculiar features of their activities and needs, the legislative being characterized by an intense politicization and flexible nature of the procedure¹⁵⁹.

The above mentioned power-conferring legislation should also incentivise experimentation. The analysis showed that not all applications reached the same maturity (e.g., AI in IA seems to be in its infancy), and others require important investment in terms of human resources and are not applicable to all types of rules (e.g., rule as a code). An incremental and experimental approach to AI in the life-cycle of rules is therefore suggested. In the short term, the potential of AI is particularly relevant for drafting, consultation, *ex post* evaluation. Other applications should be experimented in controlled fields, in order to test their real potential and tackle critical issues¹⁶⁰. For instance, the regulatory framework of a given sector (e.g., taxation) or activity (e.g., public procurements) could be translated into codes, after having simplified and reorganized the regulatory stock, with the support of AI; then, the expected outcomes of alternative options for new proposals or amendment of this framework should be tested through AI. This agile approach would allow the AI revolution to display its benefits while preventing potential harms or side effects¹⁶¹.

9. BIBLIOGRAHY

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algorithmic systems, see Ada Lovelace Institute, AI Now Institute and Open Government Partnership, *Algorithmic Accountability for the Public Sector*, 2021, p. 33-35 and 44-45, <https://www.opengovpartnership.org/documents/algorithmicaccountability-public-sector/>. Guidelines for AI procurement has been published by the UK Government in 2020 and by the city of Amsterdam (*Standard Clauses for Municipalities for Fair Use of Algorithmic Systems*, 2020, <https://www.amsterdam.nl/innovatie/digitalisering-technologie/contractual-terms-for-algorithms/>). Instead, Canada opted for a pre-selected list of suppliers also based on compliance with «demonstrated competence in AI ethics» (<https://buyandsell.gc.ca/procurement-data/tender-notice/PW-EE-017-34526>).

¹⁵⁹ Elena GRIGLIO and Carlo MARCHETTI, “La “specialità” delle sfide tecnologiche applicate al drafting parlamentare: dal quadro comparato all’esperienza del Senato italiano”, cit., p. 336. See also Fotios FITSILIS et al., *Guidelines on the Introduction and Use of Artificial Intelligence in the Parliamentary Workspace*, 2023, <https://doi.org/10.6084/m9.figshare.22687414.v1>.

¹⁶⁰ The goal of the so-called agile regulation “is to bridge the growing gap between the slower timescale of regulatory development and the faster timescale of innovation while also protecting the transparency, accountability, rigor, and relevance of our regulatory system” (Heidi R. KING, “Regulation Must Become Agile to Remain Relevant”, in *The Regulatory Review*, August 2, 2023. This is possible by a constant test and learn, based on field or lab experiments, as well as regulatory sandboxes.

¹⁶¹ Cary COGLIANESE, “Why Regulating AI Is Like Regulating Air or Water”, August 4, 2023, <https://www.pymnts.com/artificial-intelligence-2/2023/why-regulating-ai-is-like-regulating-air-or-water-says-upenn-professor/>.

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