Camera dei deputati

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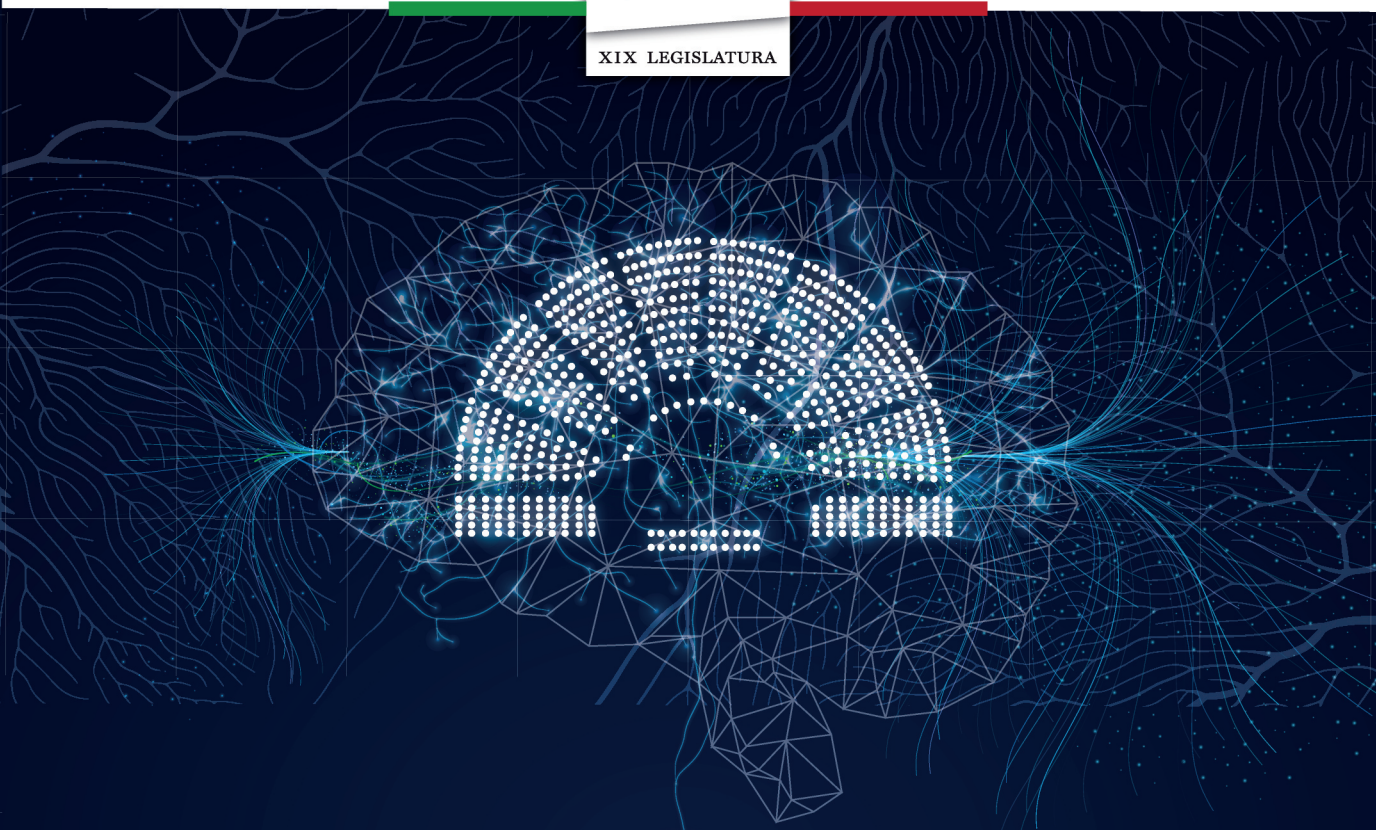

REPORT

Chamber of Deputies' Supervisory Committee on Documentation Activities

Using Artificial Intelligence to support parliamentary work

AI

February 2024

Camera dei deputati

Chamber of Deputies'
Supervisory Committee
on Documentation Activities

Using Artificial Intelligence to support parliamentary work

February 2024

Technology has always changed economic
and social structures.
Now, a self-feeding Artificial Intelligence
is driving an unstoppable progress
that is bound to deeply modify
our professional, social and relational habits.

We are in the midst of what will be remembered
as the great historical leap of the dawn of the
third millennium. We must make sure that the
revolution we are experiencing remains human.
Meaning that it must stay within the bounds of a
traditional civilisation, whose irreplaceable pillar
is the human being and their dignity.

We are therefore going through
a history-making transition.
We can all play our part for our country, Italy.
We can all do something important,
resorting to our values and to the solidarity
we are capable of providing.

By actively taking part in civic life.

Sergio Mattarella
End of Year Message
from the President of the Republic

Quirinal Palace,
31/12/2023 (2nd term)

Supervisory Committee on Documentation Activities

Functions

The Supervisory Committee on Documentation Activities is a permanent body that, on behalf of the Bureau of the Chamber of Deputies, carries out policy-setting and scrutiny functions over the documentation activities of the Chamber's offices and departments. In particular, the Committee performs the following tasks:

1. ***drawing up general guidelines*** *for the performance of documentation activities by the competent Departments and Offices;*
2. ***submitting proposals*** *on documentation activities to the relevant Chamber of Deputies bodies and, at their request, issue opinions on documentation activities with regard to coordination needs and in accordance with the resources required;*
3. ***laying down general criteria*** *for access by public authorities, entities and private individuals to the documentation and information produced by the Departments and Offices, also via the Website;*
4. ***approving*** *the Chamber of Deputies' publications plan.*

Composition

On. Anna **Ascani**
President

On. Paolo **Trancassini**

On. Alessandro Manuel **Benvenuto**

On. Filippo **Scerra**

On. Alessandro **Amorese**

On. Ilaria **Cavo**

On. Fabrizio **Cecchetti**

On. Roberto **Giachetti**

On. Elisabetta **Piccolotti**

On. Gilda **Sportiello**

On. Rosaria **Tassinari**

On. Stefano **Vaccari**

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INTRODUCTION

Anna Ascani
Vice President of the Chamber of Deputies

In an era of unprecedented innovation, artificial intelligence represents one of the most promising technologies in all areas of society, with the potential not only to improve people's lives, but also to optimise productivity in the workplace and significantly increase the efficiency of democratic institutions. However, these opportunities are associated with risks, which must be recognised and which cannot and must not be underestimated.

I am, therefore, very pleased to present the results of the fact-finding investigation that the Supervisory Committee on Documentary Activity, set up within the Bureau of Italy's Chamber of Deputies, has carried out in recent months on artificial intelligence and the contribution that AI - especially generative AI - can make to parliamentary documentation activity.

In this report, one of the first in the world in this field, we set out a summary of the challenges that artificial intelligence poses to the community, in general, and to the legislator and - thus - to parliaments, in particular. In this context, we also set out the contours of the contribution that generative artificial intelligence systems can make to the cognitive and documentary product that the Chamber's administrative structures offer to parliamentary bodies, individual members and citizens.

It has also been a most fascinating journey, first and foremost for the members of the Committee themselves, whom I would like to thank for their ever-focused and proactive participation. I trust it will also prove equally interesting for everyone reading this document. The survey has revealed steps and processes in an evolving technological continuous process ad rapidly developing process, which is one of its most significant and challenging aspects. It is therefore not intended to provide an exhaustive picture of the present situation, but to account for the efforts that have been made to gain a better understanding of this all-pervasive issue with which society at every level and in all its expressions will increasingly have to come to terms.

It is therefore essential for Parliaments to deal with Artificial Intelligence, especially since the issues raised by this subject are so far-reaching and complex – in other words, matters of great political, economic and ethical importance – that call into question the mechanisms of democratic representation.

The Committee I chair chose to adopt a method based on the democratic principles of openness and inclusiveness, involving experts, academics, and the world of business. We felt it our duty to focus on the correct way to use AI to support parliamentary work in a way that ensures respect for fundamental rights and freedoms in addition to the security and smooth functioning of the institution.

In the conclusion, we have referred to a number of principles that we feel should guide the use of AI systems to support parliamentary work. We believe that these suggestions are not only important for our future work, but can also make a useful contribution to an issue – AI and the challenges it poses – that will increasingly be the subject of global discussion and debate.

EXECUTIVE SUMMARY

Artificial Intelligence (AI) is rapidly playing an increasingly important part in our daily lives. As a result of the extremely rapid development and spread of generative AI technologies, it has evolved from a futuristic concept into a concrete and pervasive reality in our society. The increasing availability of data and exponential progress in processing capacity have made it possible to develop increasingly sophisticated and powerful algorithms. These systems, based on machine learning and neural networks, have proven capable of reaching human-like levels in a whole range of tasks, from machine translation to industrial production.

In the public arena and, specifically, in parliamentary work, AI offers unprecedented opportunities to improve the effectiveness and efficiency of our work. For example, AI systems can be used to analyse huge volumes of documents and identify useful information for law-making purposes. Similarly, AI can help Members of Parliament to advance proposals based on evidence and data.

The fact-finding investigation by the Supervisory Committee on the Documentation Activities of the Chamber of Deputies between April 2023 and January 2024 – by means of a series of hearings and a mission to the USA – set out to investigate not only possible applications to support parliamentary work, but also the state of the art of the evolution of AI, its potential, and the ethical and legal challenges it poses for the freedoms of individuals and the stability of democracies (from critical issues regarding the protection of personal data to copyright violations, from hallucinations to the risk of manipulation).

The need for timely and technology-neutral national and supranational regulation, capable of effectively regulating the uses of AI in the various sectors of society, emerged in the course of the fact-finding investigation that would enable institutions, citizens and businesses to fully exploit the benefits of these new tools.

This is where the Chamber of Deputies can play a leading role, both by the attention it devotes to these issues and by defining a fully well-informed and considered process of integrating new artificial intelligence solutions to support parliamentary work at different levels, designed to improve the effectiveness of law-making and publicising the activity of the Institution, for the

benefit of the citizens wishing to access information in an increasingly complete and accessible manner.

To achieve this result, it may be possible, after adequate testing and evaluating the results, to gradually incorporate the latest generation artificial intelligence tools – which themselves are undergoing rapid development – into parliamentary work in support of the activities of all the parties concerned, in order to enhance effectiveness.

The first step might be to integrate AI tools into the internal work of preparing parliamentary documentation for pre-legislative scrutiny and oversight of government policies.

The second step would be to use these tools to support the work of individual parliamentarians, enabling them to perform their work more effectively, for example, by using systems to prepare legislative proposals or tools to issue instructions to or monitor government actions.

The last stage or scenario would be to design a tool available to the public to enable citizens, using simple and natural language, to search and explore topics in which they are particularly interested, and the activities of individual parliamentarians on specific issues, more quickly and intuitively.

In parliamentary work, too, the use of new-generation AI systems can therefore be a tool for improving the productivity and effectiveness of work as a whole and can make it possible to raise the level of public accountability and transparency

FOREWORD

Between April 2023 and January 2024, the Chamber of Deputies Supervisory Committee conducted a fact-finding investigation into artificial intelligence and its possible use to support parliamentary work.

The fact-finding investigation – following a similar activity conducted during the 18th Parliament – was conducted with hearings of experts and a mission to the USA to meet representatives of the main AI market operators and academics.

In order to perform its constitutional of policy-making, scrutiny and law-making functions, Parliament gathers vast amounts of data every day, both from the parliamentary representatives themselves (individual MPs, political groups, etc.) and from outside (such as institutions with which Parliament naturally interacts, primarily the government); in turn, Parliament produces a vast amount of new data that it makes available to the entire political community.

As the Constitution stipulates, parliamentary work is open to public scrutiny: this requirement has been met, in the new digital sphere, by setting up the extremely informative websites of both Chambers and by adopting a system of linked open data that makes a huge mass of data on parliamentary work available to anyone interested.

To produce and process all this information, Parliament has been using artificial intelligence applications for some time now, and an excellent level of quality has already and achieved, although the final release of the products obtained through these systems still requires a person to check the quality and appropriateness.

Now, the introduction of generative AI applications could entail a much more extensive phase of innovation (simultaneously involving a much larger number of parliamentary functions); it seems destined to substantially affect both the ways in which Parliament produces, processes and consumes information and relations between parliamentary representation and the public sphere.

On these closely interconnected fronts, generative AI applications may be expected not only to ensure significant efficiency gains for existing activities, but also to introduce entirely new ways of performing the function of political representation entrusted to the Houses.

It is precisely by virtue of the 'transformative' potential of this innovative

phase that it should not be something Parliament sees as a burden imposed on it, but it should be promoted and led on the basis of transparent, shared criteria adopted after proper consultation and thorough study.

The purpose of this paper is to set out the main findings of the survey, outlining the areas for the beneficial use of artificial intelligence to support the work of the legislative assemblies.

The report is divided into four parts.

The first provides a summary of what emerged during the hearings.

The summary of the contribution of each expert is followed by an overview of the main points of agreement between the speakers and a list of the topics on which the experts invited expressed differing opinions, both prepared using artificial intelligence systems.

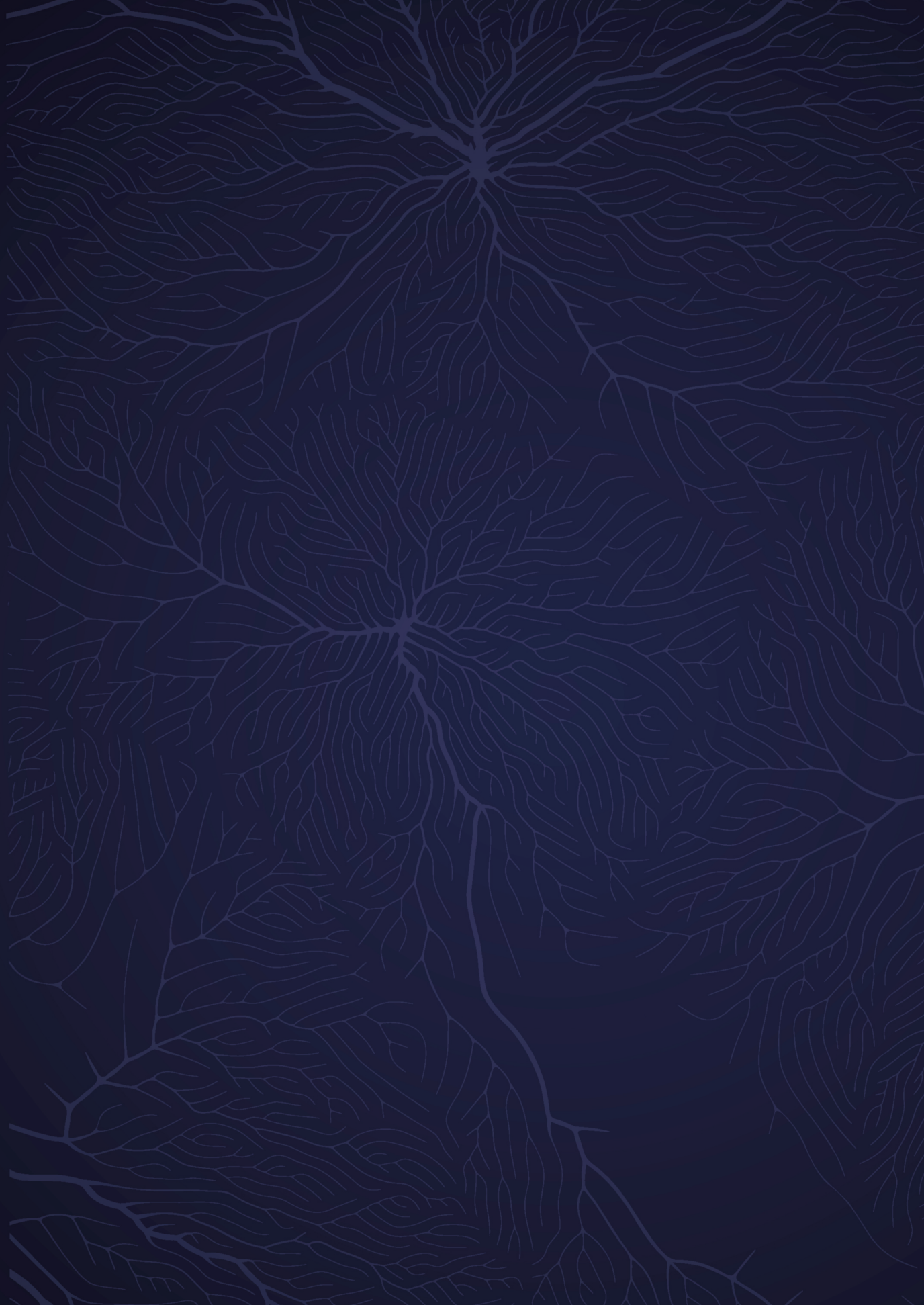
The second part contains insights from the experts – Professors Paolo Benanti, Rita Cucchiara, and Gianluca Misuraca – on the ethical and technological aspects.

The third part provides an overview of the main experiences of using AI in the Chamber of Deputies and the main international practices of using AI in parliaments.

Finally, the fourth part sets out the principles that the Committee – in the light of the information and inputs gathered – believes should be followed when using AI systems in the parliamentary environment.

It is a starting point rather than an end point, exploring ethical, technological and legal issues in more depth with a view to future experimentation by the Chamber of Deputies.

The purpose of this report is not only to give an account of the Committee's activities, consistently with the complete transparency of the hearings, but also to offer useful contributions to knowledge and analysis of the state of the art of a technological phenomenon that will have an ever-increasing impact on every area of civil and democratic life.



PART I

Summary of the evidence gathered at the round of hearings

Conduct of the investigation

The subject matter of the fact-finding investigation was artificial intelligence and the contribution that the new digital technologies can make to parliamentary functions and the documentation activities carried out in support of them.

It consisted of a round of hearings and a mission to the United States in October 2023.

The hearings held in the Chamber of Deputies – sometimes remotely for some experts – involved authoritative representatives from the worlds of research, academia and the technology industry, who submitted reports and discussed with the Committee members, thereby often broadening the scope of the matters discussed.

The study mission took place from 22 to 26 October 2023 in Seattle and San Francisco, where a Committee delegation met key players in the field of Artificial Intelligence (in particular, senior executives of Microsoft, Amazon, Salesforce, Open AI, Google and META and researchers from Stanford University).

These meetings provided an opportunity to explore such topics as the potential of AI, the ethical and legal challenges it raises, the implications for the stability of democracies, and potential applications to support parliamentary work.

In particular, it became clear that timely and technology-neutral European and national regulations were needed, capable of effectively regulating the uses of AI in the various areas of society.

Summary of the interventions of the experts invited during the hearings

It might prove useful to begin with a summary of the contributions of the experts heard by the Committee.

Paolo Benanti

Pontifical Gregorian University

Artificial intelligence is the result of technological development and its impact on modes of production. This poses problems regarding the ethics of technology.

First of all, we should speak of 'artificial intelligences' in the plural: they are a set of mathematical methods that range beyond the traditional programming method. So far, machines applied to meet production and social needs followed the 'if this then that' pattern, that is to say, a pattern scheme whereby the machine responded to various predetermined situations. Artificial intelligences, on the other hand, are systems that can autonomously adapt to non-predetermined contexts.

The most significant artificial intelligence in recent years is the one that can offer personal text writing assistance. Although it emanates from the transformer, namely, a type of mathematical transformation patented by Google – it was developed by OpenAI in the ChatGPT program (an acronym where T stands for transformer). Artificial intelligences that produce texts rely on ever-expanding databases (often in the order of hundreds of billions) and are able to train themselves and predict what the person intends to write.

The development of artificial intelligence for writing purposes has attracted huge financial investments and has also challenged the pillars of relationships in research. Until now, it was the universities (public and private) that did the theoretical research and experimentation, while companies did the applied part, according to the company's needs. Today, companies are also investing heavily in the theoretical part.

Progress in this field has led to enormous innovations such as:

- the possibility of obtaining texts regarding one discipline that are also comprehensible to experts in different disciplines (e.g. a quantum physics text comprehensible to a biologist) and to people with no special knowledge;
- the copilot, i.e. a work colleague. Here, Italy's demographic prospects of a decline in productivity as a result of a shrinking of the potentially active

population (between zero and 42 years of age) could be offset thanks to the copilot.

Whatever technological choices are made, there will be ethical and value implications.

The first ethical issue is the choice of approach. We need to equip ourselves with critical tools that warn against one-sided models of explaining reality. The former model was based on the purpose (it rains because the fields need to be watered and to grow grass in them); the scientific revolution model was based on causation (it rains because there is atmospheric instability). Artificial intelligence proposes a correlation model (it rains because I notice that umbrellas have been opened). Correlation is a fact of experience that may be useful, but in itself it is fallacious. This requires ethical and legal curbs to be put in place to ensure that checks and counter-checks are performed on what is produced by artificial intelligence.

The second ethical issue is the enormous capacity of AIs to handle and process information, for they predict and can sometimes produce events, inducing people to perform certain actions (known as 'nudging'). This must therefore alert us to the influence these systems exert on a community.

The third theme relates to the areas of work that are likely to be replaced by artificial intelligence. Counter-intuitively, these are jobs requiring a medium-high level of intellectual skills because machines capable of making rapid calculations using vast volumes of data are cheaper than robots. From this point of view – for example – it might prove cheaper to replace staff working with numbers that food delivery staff.

Addressing these ethical issues also opens up an opportunity to seek an alternative to the model in vogue in the English-speaking world, for there also exists the Conway's law, which states that every organisation develops software in the image of its own power relations.

Rita Cucchiara

University of Modena and Reggio Emilia

An informed discussion on artificial intelligence must be able to rely on a familiarity with the different definitions of AI.

In the European Commission's 2020 White Paper, artificial intelligence is defined as a set of computational techniques that exhibit intelligent behaviour designed to allow a computer system to interact with its environment

and perform actions in order to achieve given objectives and with a certain degree of autonomy. It is a somewhat tautological definition but it is a reminder that artificial intelligence is able to interact with the environment and people (via perception, language, sensors), to perform actions (such as moving a robot) but acting 'intelligently'.

AI could in some ways borrow from the animal biological definition, which, according to Dicke and Roth (British Royal Society, 2016), is the ability to solve problems arising in their natural and social environment culminating in the appearance of novel solutions that are not part of the animal's normal repertoire. This includes forms of associative learning and memory formation, flexible behaviour and improving the pace of innovation, as well as skills that require the formation of concepts and the intuition of abstract thought.

Between 2020 and 2023, the OECD offered several important definitions:

- Artificial intelligence: a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments;
- machine learning: a set of techniques that enable machines to learn automatically through patterns and inferences without receiving explicit instructions to do so by humans;
- neural networks: repeated interconnection of thousands or millions of simple transformations into a larger statistical machine capable of learning sophisticated input-output relationships;
- deep learning: technology to modify the representation of data for a highly compact and higher level of abstraction, depending on the objective to be achieved. This is the approach of modern generative AI, which is capable of having compact representations of knowledge, which can then be used as a foundational model, in order to achieve different goals, such as expressing with language, understanding and classifying.

Moreover, this is the approach of modern generative AI, which is capable of making compact representations of knowledge, which can then be used as a foundational model, to realise different goals, such as being expressed in language, understanding and classifying.

According to these definitions, AI has four advantages:

1) An immense amount of data available;

2) Computational power;

3) Mathematical tools to manage them (algorithms, models and architectures);

4) The human factor (competent experts). In this respect, in particular, in the immediate future the development of AI systems will require highly qualified human resources, both in the public and private sectors, and will there-

fore prove to be a powerful stimulus to employment as well as the need for continuing and specialised training.

These factors give rise to a very wide range of uses: for instance, facial recognition, health data processing, their application to robots and drones, and generative to predictive systems.

Moreover, the features of AI systems mean that the time elapsing between successful research and actual business use (time to market) is very short. The speed of transforming the idea to the product, the complexity of the systems and their widespread deployment require government awareness above all, both for their adoption and for regulating and preventing the risks posed by artificial intelligence.

With regard to this first aspect, both the public and the private sectors are needed for the massive investments needed to develop these technologies. Training AI systems costs many millions of dollars and is not very environmentally sustainable.

As for the second aspect, EU regulation began with the AI Act, which is based on risk classification.

Italy's AI strategy was drawn up in 2021, by agreement between the departments belonging to the Ministries of Economic Development, University and Research and Innovation, and given its pervasiveness it identifies 11 priority areas of intervention: industry and manufacturing, education, agrifood, culture and tourism, health and wellness, environment, infrastructure and networks, banking and finance, public administration, smart cities, national security, and information technology.

In these fields, three policy pillars (talent and skills, research, and applications) and 24 specific actions are being implemented, to be developed through calls for tender and projects.

In many areas, such as in public administration, one item of interest is document analysis and comprehension, where several areas of action can be envisaged, such as: text and visual data processing, content search (information retrieval), decision-making support, and interacting with people leading to summarising and generating text to produce summaries and answers to specific questions.

Maurizio Ferraris

University of Turin

Artificial intelligence is not science fiction, but something that is profoundly human. Technology and the Internet are made by humans for humans (they are of no interest to animals, for example). Machines produced by technology may replace certain aspects of human work, but they can never take over or replace humans in what Soren Kierkegaard called the instant of madness, namely, taking decisions.

Machines can do many things but they are different from the human organism because they lack the urgency of metabolism and the awareness of limited time. An organism – once switched off – is dead forever. A machine has a switch and can be switched on again.

When considering the development of AI systems, which are very powerful, there are essentially three systemic objectives:

- Given that the leaders of this development are concentrated in the United States, on the one hand, and in China, on the other, and that the Italian Parliament is in Europe (i.e. a place whose power to influence the dynamics of AI is limited), it is important for the Italian Parliament to help create a synergy of experts and gatekeepers to ensure that users are not left alone faced with the power of AI. AI must therefore be subject to rules;
- Given that the new global wealth used by AI is data, a webfare system is needed, that is to say, a redistributive mechanism that allows everyone to enjoy the fruits of this wealth;
- everyone's data assets should be 'portable' and data owners must be able to make them work for them and not only for the huge databases of the AI giants.

Governing AI is a massive task that must also aim to prevent fear and foster trust in democratic mechanisms, precisely because political decision-making cannot be delegated to machines.

And the problem of the substitution effect on labour is an age-old phenomenon that requires us to produce fewer things and fewer goods, and more values, including the production of decisions regarding the value of things: moving on from *homo faber* to *homo valens*.

Gianluca Misuraca
Polytechnic University of Madrid and Polytechnic University of Milan

The emergence and establishment of generative Artificial Intelligence (as Bill Gates has noted) is a turning point not unlike what occurred in the early 1980s with the development of the graphical user interface.

To govern this enormous innovation, the EU – as part of its strategy for the future of the Digital Europe – has issued the AI Act based on an anthropocentric vision. Its ambition is to devise international rules that will lead to responsible and trustworthy AI. This is a 'third way' between the American and the Chinese approaches.

One example of a very serious risk that this anthropocentric approach seeks to contain is the combination of ChatGPT with biometric data capture and management systems.

To deal with the use and deployment of AI in governmental systems, the opportunity-risk dualism arises once again. AI can facilitate improving the organisation of public administration, offering public servants support with decision-making and offering personalised applications and customised solutions to citizens, and increasing digital services. But it also carries the risk of mass surveillance (from this point of view the AI Act deems the risk posed by subliminal techniques, social scoring and biometric identification in public places to be unacceptable) and of reproducing existing inequalities, since the technology is only accessible to people already in possession of the means and skills required.

All this may be summarised in terms of the following demands:

- governing AI: rules and barriers must be introduced for the development and use of AI;
- governing with AI: AI tools must be available to government functions without losing decision-making control;
- governing through AI: the 'superhuman' potential of AI system to be exploited.

At the present time, the uptake of AI in the public sector in Europe is very heterogeneous, and in each Member State AI is more widespread in central administrations. This leaves scope for efficiency gains, to customise existing services and develop new ones, combating corruption and fraud, and consolidating trust among the general public.

The government is both regulator, and user, and also an 'orchestrator', namely, an entity that encourages and stimulates the progress of AI, in collaboration between the public and private sectors. To be successful, the skills and training of public servants in this field to be stepped up, among other things.

In parliament, AI can help to expand the knowledge base prior to decision-making, to predict the effects of public policies and to involve citizens in the decision-making process (in this regard, the European Orbis project, coordinated by the *Politecnico di Milano*, has been launched to study the impact of AI in participatory democracy processes). Although only ten per cent of parliaments worldwide have adopted AI technologies, significant experiences have been launched in many countries (the United States, South Africa, Brazil, Estonia, the Netherlands, and Japan).

In the Italian Parliament, AI is used for parliamentary reporting activity (using voice recognition systems), translation, managing amendments; the Senate, is trialling a chatbot to facilitate and guide access to the wealth of information on the website, and is testing image recognition tools for conducting searches of the photo archives.

In conclusion, these initial experiences demonstrate the importance of 'digital sovereignty', in the sense of the ability to establish Europe's strategic autonomy in developing and governing AI and in conducting digital diplomacy, in order to ensure that foreign (essentially American and Chinese) AI systems are not able to decisively condition European politics and democratic participation. In this case, the concept of transparency (that is to say, the visibility and traceability of AI products) is decisive.

Pier Luigi Dal Pino

Senior Regional Director, Government Affairs Western Europe, Microsoft

The characteristic feature of the fourth industrial revolution has been the creation of machines capable of taking decisions. As occurred in the previous industrial revolutions, it has begun with a market crisis, followed by the creation of a totally new market. Speed is the hallmark of this phase. Microsoft invested in OpenAI in 2019 – a technology designed to be launched in 2033. Nevertheless, the speed of development amazed its investors who decided to place it on the market, because it was for the common good.

Artificial Intelligence and Generative AI is a technology to enhance human ingenuity and skills, not to replace them. Its function is therefore like a copilot or 'navigator' to assist the human being, who retains control.

This is also the purpose with which Microsoft, in 2020, together with the Vatican, launched the 'Rome Call for AI Ethics' initiative with the Muslim and Jewish religions to enshrine the fundamental principle that the human being must remain at the centre of technological development, which was renewed in 2023.

This is the background to the declaration by Microsoft's President Brad Smith on 25 May 2023 in Washington, emphasised that OpenAI is a totally separate entity from Microsoft, capable of creating language-based and no longer image-based, deep learning models, and presented a 'five point blueprint' to ensure that AI remains under human control. These five points consist of the need to:

- establish new standards, defined globally and not by individual countries, that ensure safety and security standards led by governments and not by technology companies;
- create a system of safety brakes to be used in the event that the algorithm generates risks outside those conceived by human beings. This creation must take place not through a self-regulatory formula, but through a targeted regulatory intervention;
- create a legal and regulatory framework that reflects the different responsibilities of the actors producing and working on generative AI (such

as the service provider, the user and the developer);
- promote transparency and ensure the access to the technology by not-for-profit academic institutions;
- pursue public and private partnerships to address global challenges such as sustainability and the defence of democracies.

Europe should define its role as more than merely acting as a regulator, for all the skills and capabilities are already there to develop applications: innovative companies and start-ups should be encouraged to do so.

Mattia De Rosa

Director of the Data & AI Specialist Unit, Microsoft

Language models (LLMs) are the tools behind generative AI technology such as ChatGPT. LLMs are able to analyse and understand written language; they can make summaries, extract information, modify text according to our instructions, they can generate translations from one language to another, from natural languages to synthetic (programming) languages. This means that the document base can be in one language, the question may be put in another language and the answers received in the language chosen by the user.

Three examples of concrete applications of these models in the public and private sector are illustrated below.

Portugal's Ministry of Justice has published a section on its website to offer every citizen all the national legislation on family law, separations and divorces, giving citizens the possibility to question the site using natural language. It is interesting that these technologies do not answer the question by issuing lists of answers with links to navigate the web as has been the case until now, but they provide the answer directly by processing the contents, and providing a bibliography, or list of the sites from which they have extracted the information.

The Agency for Administrative Modernisation, also in Portugal, has a very similar tool to Italian SPID called the 'digital key'. For the launch of this new service, an avatar was created, a virtual character with human features, and speech-to-text technology was implemented, to enable the user to ask questions in natural language which are translated by the system into text, and then to receive answers back in natural language.

The latest example comes from Japan and relates to a private company, Panasonic Connect, which decided to give all its employees access to this technology with an invitation to use it to write e-mails, make summaries and

come up with innovative ideas. Since Japan is currently the country with the most elderly people in the world (more than 30 per cent of the population is over 65 years old), this example clearly shows that one of the fascinating aspects of these AI-related technologies is that, unlike other technologies, a person does not need any great skills to interact with them, but only a knowledge of their own language. And, incidentally, the language these systems understand best happens to be Italian.

These examples demonstrate that in order to prevent AI from inventing information that does not reflect reality, it is necessary to provide it with huge documentary bases on which to reason and to ensure that the systems reason only using these bases.

Alessio Del Bue

Italian Institute of Technology Foundation

The Italian Institute of Technology Foundation works in the field of computer vision and machine learning, particularly on assistive aspects, helping people by facilitating their everyday activities, with a focus on privacy. It also deals with integrating language models to simplify access to technology. Developments in generative artificial intelligence include, for instance, 'copilot' systems for writing software and completing texts while writing.

These tools could be used in the parliamentary environment, although the complexity of multimedia data and the challenges raised by associating disjointed information need to be taken into account. Artificial Intelligence can be used to structure the data and make them usable, for the purpose of supporting the parliamentary functions. There is potential in all these areas, but there are also risks: it is essential to evaluate the existing rules and regulations.

Parliament has special and interesting characteristics for research, since it generates large volumes of data. These data need to be structured for later use and are multi-modal, that is to say, they include text, images and video. However, managing this amount of data throws down challenges, such as associating a complex amount of information complexities. For example, a parliamentarian's speech at a particular session might be linked to several images of the same session, but these data items are often disjointed.

The Parliament's database has a well-established data structure, but to improve its usability a competitive infrastructure is needed, and experienced technical staff, as well as respect for ethical principles in order to develop artificial intelligence models to support parliamentary objectives.

Nestor Maslej

AI Index Research Manager, Stanford University

Stanford University's AI Index 2023 report, one of the world's most auth-

oritative publications on AI trends, shows that AI systems had already become widely deployed by 2023, but the brought with them the associated problems. Models such as PaLM, BLOOM and DALL-E2 were prominent in 2022; the launch of ChatGPT in November 2022 signalled the availability of AI to the public at large.

The self-improvement of AI will boost the pace of scientific progress. AI systems have been developed that can help protect the environment, such as – for example – a DeepMind-developed learning algorithm trained to optimise energy consumption in commercial buildings. On the other hand, the training of AI systems can harm the environment in terms of harmful emissions. Another negative aspect concerns ethical abuse and the spread of deepfakes. There is also the risk of bias: for example, when asked to generate images of influential people, Midjourney (a text-to-image system) produced four images of elderly white men.

In geopolitical terms, the USA and China lead the research, but the United States produce most of the models. The geopolitical dimension becomes crucial with advanced AI technologies.

One important trend concerns the players that are leading the race in the AI sector. Until 2014, the most important machine-learning systems were launched by academic institutions. Subsequently, however, the sector has been dominated by industry. For example, in 2022 there were 32 major machine-learning models produced by industry, compared to just 3 produced by academia. The increased presence of industry is not surprising, however, given that AI systems are growing increasingly larger, more costly to train, and they have to rely on ever more powerful computational resources. This highlights the risk of AI development becoming concentrated in the hands of just a few players.

Industry is showing increasing interest, with a rising demand for AI-related skills in the USA, which are also driving global investment. The sectors in which the most is being invested in AI are healthcare, data management and fintech. Companies adopting AI are reporting significant reductions in costs and increases in revenue.

Political interest has also grown, with increased AI legislation being enacted worldwide. Public opinion is divided in geopolitical and gender terms. In China, 78 per cent see more benefits than drawbacks with AI, compared to 35 per cent in the USA; Italy is in the middle, with 50 per cent. Men are less distrustful of AI than women.

AI is an integral part of everyday life and can bring both benefits and harms. Monitoring the positive aspects and minimising the negative ones requires critical thinking on the part of corporations and governments.

Anna Makanju

Head of Public Policy, OpenAI

OpenAI was founded in 2015 with the aim of ensuring that Artificial General Intelligence (AGI) will benefit the whole of humanity. It was initially founded as a not-for-profit company; over time, it has adopted a structure that includes for-profit elements to secure resources and investment, but it maintains independent non-profit governance. The GPT-4 state-of-the-art model was developed with a strong emphasis on safety and security, involving external experts to assess and mitigate the risks of malicious content before its market launch.

OpenAI uses language models such as GPT-4 in various applications, from text translation to summarisation. Such models have been used in finance (Morgan Stanley) and also by governments (India).

Parliament could make use of it using its own corpus of legislation and checking, for instance, whether certain legislation has already been passed in the past or to formulate draft legislation of relevance to the same matter, thereby improving efficiency and facilitating access to the information. However, occasional 'hallucinations' may occur; in order to mitigate this problem, the use of the model as a database assistant is suggested.

With regard to data security, OpenAI ensures that customer data are never used for operational training and are only stored for a short period to prevent misuse. In addition, users can disable the training function to prevent the use of their own data.

OpenAI is moving ahead towards multimodality, allowing the models to understand and respond to images, improving interactivity and applicability. Safety, especially for children, has been treated seriously, ensuring that GPT-4 is the safest model available to date, with restrictions on the generation of any adult or violent content.

With regard to regulations, OpenAI supports the regulation of artificial intelligence by democratic governments. Having examined the draft European AI regulation, it believes it goes in the right direction but requires further detail and thought on issues such as transparency when interacting with AI.

As far as data and training criteria are concerned, OpenAI holds proprie-

tary, scientific, literary databases to ensure that the model has the broadest possible knowledge base and capabilities. It also uses data extracted from the Internet, which is evaluated by a pre-training team to filter out anything inappropriate and any personal information. The model is not anthropomorphised: if personal, religious and political questions are entered, ChatGPT replies "I am a great language model, I have no political opinions, I have no religious beliefs".

In terms of the impact on jobs, OpenAI argues that technology eliminates tasks rather than jobs: new professions can emerge and occupations can evolve.

OpenAI has developed a tool for summarising legislative proposals for the Congressional Research Center in the United States: a summary of each measure is prepared before it is submitted to the Senate, for example. A measure hundreds of pages in length can be summarised using the template, but the summary is reviewed and checked by officials, so the final drafting work remains to be done. Finally, OpenAI is committed to transparency, providing systematic evaluations of the templates and working on standards for behavioural assessment. Broader cooperation is needed to address the challenges of disseminating AI-generated content.

Gianfranco Basti

Pontifical Lateran University

Artificial intelligence and autonomous systems, as artificial moral agents, pose an ethical challenge. Regulation of AI can be performed by external control, using a human operator, or by the direct implementation of deontic logic algorithms in systems to ensure compliance with ethical rules. A distinction must be made between artificial intelligence systems as objects – and the philosophy behind the European Union's AI Act is along these lines – and as subjects, namely, as artificial moral agents or autonomous systems.

In order to address the problem of distributed human-machine responsibility, 'machine ethics' is required, also considering the disparity in responsiveness (the ability to adapt in real time to changes in the environment) between machines and the human brain. The issue of opacity and distortion when processing information in Artificial Intelligence systems must also be considered: these systems, which include machine-learning algorithms based on multilayer architectures of neural networks, or so-called 'deep learning', systematically suffer from a problem of opacity to the programmer himself in their decision-making process.

It suggests that effective ethical-legal regulation is needed, with the implementation of deontic algorithms in machine learning algorithms and an automated ethical-legal audit to check compliance with ethical rules. For example, in online trading algorithms, the machine-learning algorithm is the maximisation of profit. Ethical constraints could be added: a prohibition on the use of mafia capital or capital from labour exploitation, and so on. It is necessary to address the ethical challenges posed by AI to ensure that it will have a positive impact on society.

Naila Murray

Head of FAIR (Fundamental AI Research), Emea Lab, META

META's aim is to create advanced automatic artificial intelligence to be used for the benefit of the entire population. In particular, META's activities are directed towards developing generative AI, which can lead to major breakthroughs in the field of research and can link artificial intelligence more closely with the Metaverse of which it already forms an integral part: it is used, for instance, to generate 3D content and for the development of first-person visual perception.

In order to achieve these aims, through the FAIR laboratory, META is conducting exploratory research in both old and pioneering areas. In this field, META has undertaken studies in the area of unsupervised machine translation, through a programme that is already capable of covering more than one hundred different languages, in the area of video contribution analysis, through the development of an end-to-end object identification paradigm, and in the area of interaction between humans and AI for image generation.

As for generative AI, in recent years META has released a number of large language models (such as OPT-175B and Llama): this open-source technology must be developed and used in a responsible and transparent manner. To achieve this, we are hoping for wider access to technology and more sophisticated models, which are currently being developed more by industry than anything else, and for an increase in the number of researchers who are being called upon to test these models, so that the risks and the potential of these systems can be identified in collaboration with the community as a whole. Furthermore, open source AI can improve the visibility and public trust in these technologies.

Regarding the impact of generative AI on the labour market, historically speaking, technological advances both help to increase production while, on the other hand, having an impact on existing jobs. We can expect that some jobs will become less common, but there will also be new jobs being created that do not yet exist at the present time.

As far as privacy is concerned, META already has many technologies in

place that are capable of verifying whether data posted on the platform has been generated by artificial intelligence. At all events, the transparency of AI-generated data is a critical issue because research on generative AI is changing very rapidly and it is necessary for us to understand how to take forward both development and the issue of transparency and content control as well.

Angelo Mazzetti

Head of Public Policy - Italy and Greece, META

It is desirable to have forms of regulation that can ensure the development of technology in a controlled, safe and transparent manner, but it seems crucial to strike a balance between mitigating the risks that may arise from the use of some of these technologies and the flexibility that must be adopted within that regulatory framework that will ensure that these technologies can continue to develop.

Transparency, privacy protection and accurate information are fundamental principles in the world of the new technologies. On the subject of transparency, META is committed to informing users about several aspects: for instance, it has explained why, when accessing the platform, we see advertisements that are relevant to their interests and experiences on the platform; it has also publicly announced how the algorithms operate.

With regard to the issue of privacy protection, META has a multi-level control system, privacy review, which is applied to the development of each of its products: this control system checks that any personal data is being responsibly used in the development of the technologies under consideration.

As far as misinformation is concerned, META is not using any gen-AI technology to create and publish content. However, a public debate on the issue is needed. It proposes following the model adopted by META over the years to minimise the visibility of content identified as false or potentially misleading, through a complex network of fact-checkers. META's most significant technological investment in this direction is in enabling users to have as much context as possible with respect to a given news item.

Michael Sellitto

Head of Global Affairs, Anthropic

The first feature of artificial intelligence models is that if you increase their size in terms of computation and parameters, you will improve performance, and so we need to continue investing in the technology.

The second is that costs have increased in recent years, which has led to a significant reduction in academia's involvement in new technologies. To prevent everything from becoming concentrated in private companies, governments need to make ambitious investments in their ability to monitor and evaluate technology.

With regard to the safety issues connected with the use of AI, last year Anthropic published a paper on constitutional artificial intelligence that set out a number of principles that the model must use. In order to use this new technology as a way to include public input into our AI training principles, Anthropic approached a representative sample of the US population with a polling platform, asking this sample what principles they would like to see in the AI model, and then feeding this information into the new model.

We would emphasise the usefulness of watermarking systems on audio-visual content, to indicate that a certain content has been created by AI, also with reference to text generation. Such systems permit texts to be traced back to the models that may have been used.

Orowa Sikder

Technical Lead on Applied Research, Anthropic

AI can be used in the real world, for instance, for translating documents or summarising content; artificial intelligence can identify which information is the most important, so that workers can focus on other aspects.

Technology should not exclude certain professions from being able to

work, but it should be aimed at simplifying their work, so that they can concentrate on the most interesting and useful things.

Overview of conclusions

As a tentative conclusion, given the intrinsic features of the phenomenon examined, the Committee believes that the work carried out has revealed:

- four kinds of general reflections, which tie in with four major issues raised by artificial intelligence;
- a range of additional information on public policies and strategies that have been made known already in Europe and worldwide.

1) *A powerful new technological breakthrough*

Artificial intelligence is at the apex of a constant technological evolution, but it also marks a radical new direction to the development of computers in the latter half of the 20th century and the first few years this millennium: for it has surpassed the principle of machine programming. The criterion whereby an automatic mechanism responds in a predictable manner to a predetermined stimulus has been replaced by systems that can adapt autonomously to the external environment; this is why it is called 'generative artificial intelligence'.

This is brought about by the extreme use of mathematical methods (algorithms) that exploit the processing of immense masses of data, understood as minimal units of information.

A person using generative artificial intelligence systems no longer needs to input precise instructions, but may merely offer a framework in which these systems can enter coherently and offer feedback, which would generally be considered to be the product of the human intellect.

These AI systems have the ability to train themselves on data and deliver different outputs more quickly than humans and – sometimes - even more accurately.

In this regard, companies (mainly American and Chinese ones) have developed both LLM (large Language Models, that is to say, text production models) and image production methods, as well as voice-to-text, translation and augmented reality, which results in creating a virtual world.

As a result, AI systems are capable of performing the most diverse tasks (e.g. computing, data processing, text, image and video production, voice and facial recognition, etc.) and can be used in a very wide range of fields, such as in the social and production fields.

2) The need for investment

Designing, developing, maintaining and operating AI systems demands enormous financial, human and instrumental resources. This need occurs on three levels.

First of all, in terms of research and experimentation, universities and public research organisations, on the one hand, and corporations, on the other, employ or plan to invest enormous resources. This is due both to the need for quality control of AI systems and checking for abuse, and to the fact that their time-to-market is very short.

A second level of reflection relates to human resources. A robust apparatus of human talent and skills must grow and consolidate around AI that can take charge of all the various aspects, both scientific and experimental and regulatory.

Governments and public administrations – if they are to meet the challenge effectively – will have to equip themselves with well-trained personnel capable of understanding the mechanisms of AI and the risks involved. For this reason, the European Commission has decided, for example, to fund the programme called AI4Gov Knowledge Hub, designed to train an excellent public service élite that are able to tackle the task of governing it.

In turn, industrial supply chains will also have to prepare themselves to run well-targeted recruitment campaigns that will ensure they have the energy and aptitude to pursue this path forward.

In this respect, the feared substitution effect between human labour and AI systems may be offset by the spread of new skills and tasks, given adequate training and planning.

The third aspect relates to environmental sustainability: data storage and management require equipment that occupies considerable physical space and needs huge amounts of energy and efficient, continuous-cycle cooling systems, which in turn emit carbon dioxide in considerable quantities. Containing this impact (once again) requires serious measures and specific technologies.

3) Ethical issues

The power of AI systems, both in terms of speed and size, poses huge ethical problems, as do all stages in technological progress.

The first problem – which also sums them all up – relates to personal human dignity.

AI systems capable of very rapidly performing facial and voice recognition, predicting human reactions and directing individual and collective behaviour (using sub-liminal and nudging techniques) place people at risk as agents of

their own existence and degrade them to become tools, controlled and subject to manipulation.

More specifically, AI systems (especially models for text and image production) which rely on masses of data known as corpora, are geared to offering services and outcomes that are already politically, religiously and ethically addressed depending on the content of the corpus.

In practice, AI brings with it both the risk of mass surveillance and the biases, namely, the distortions that can influence the behaviour and decisions of an algorithm, and that may have to do, among other things, with unrepresentative or incomplete training data or even with preconceptions, opinions, cultural, social and institutional expectations that are indirectly being transmitted into the technology by the people who conceive and design the artificial intelligence system.

In addition, this also raises the issue of personal data protection. Since the huge information bases on which AI systems are based also include data on people who do not use the output (because they do not know them, or wish to, or are unable to), it becomes necessary to protect these people from this kind of theft of their own property.

Moreover, these systems – like all IT tools – can be used for blatantly unlawful activities, such as spreading false information (fake news), hacking, and cyber-attacks.

Secondly, and from the social point of view, given the factors outlined above regarding the costs that anyone wishing to use AI systems have to bear, they tend to reproduce the existing power relations between the social classes and thereby risk deepening the social inequalities.

4) The need for policies and regulation

Taking all issues together, the public decision-maker is given the fundamental task of regulating the various aspects of AI development. The systems AI offers – as mentioned above (see, in particular, the testimonies of Father Benanti and Professor Ferraris) – profoundly affect social dynamics and public opinion.

Democratic and political representation bodies are therefore required to direct the potential of AI for the public good and to defend themselves against its risks.

This need has been felt worldwide for several years now, and the first attempts to deal with it have been promoted in the EU and the USA.

The EU Commission first drafted a strategy (COM (2020) 66 final) as a result of the White Paper (COM (2020) 66 final); then it put forward the proposal for the adoption of an EU Regulation on AI (the so-called AI Act, COM (2021) 206 final).

The AI Act is designed taking an anthropocentric approach, aimed at creating international rules that lead to responsible and trustworthy AI. Regulation in the European Union is based on the following classification of risks:

- unacceptable;
- high;
- low or minimal.

Only systems entailing risks in the first category are prohibited: this includes, among others, systems for the indistinct surveillance of persons in public places, subliminal techniques, those exploiting the vulnerabilities of a specific group of persons due to age or physical or mental disability, and the combination of textual and image production models with the acquisition and management of biometric data (see - on this point - Article 5 of the draft Regulation).

High-risk AI systems are not banned outright but are subject to a dense grid of restrictions and precautions. The main ones are the provision of proven risk management, transparency and user information systems and marking. More specifically, the draft Regulation stipulates that the databases used for training, validation and testing of the AI system must be relevant, representative, complete and error-free (see, however, the provisions in Title III of the proposal).

Low-risk AI systems will be exempt from obligations, subject to voluntary compliance to codes of conduct by the providers of such systems, e.g. where there is a clear risk of manipulation. Users will have to be made aware that they are interacting with a machine.

The draft Regulation also lays down investment rules.

A more pragmatic and less prescriptive approach is followed so far by the United States, which is more oriented towards favouring forms of self-regulation by private actors. However, the US government has not given up on an attempt at regulation with the issuance of President Joe Biden's Executive Order dated 30 October 2023 (No. 14110), which, however, does not have the normative force of a law of Congress. It sets out certain goals and provides a timetable of actions by the federal government to regulate individual aspects, not infrequently similar to those addressed in the European AI Act.

5) AI experiences in the European public sector

In the course of the investigation, it transpired that several countries have already experimented with the use of AI systems in the public sector. In the EU, the countries where these tools are most established are the Netherlands, Portugal, Denmark, Belgium, Spain and Sweden.

Portugal, for instance, has implemented AI systems in the area of the ad-

ministration of justice. On the website of the Ministry of Justice, a section has been opened and family law legislation has been made available to citizens, with the possibility of asking questions, even using layman's terminology. These technologies do not respond to the FAQ with lists of answers and links to open, but provide the textual answer directly, elaborating on the contents and providing a bibliography.

In Portugal, the competent Agency for Administrative Modernisation has also implemented a tool similar to the Italian SPID, the 'digital key'. For the launch of the service, an avatar – a virtual character with human features – was created, as well as speech-to-text technology enabling the users to ask questions verbally and receive answers both in writing and verbally.

More generally, the investigation has led to the conclusion that public administrations use AI systems mainly to improve general services, in healthcare and in what might be defined as economic affairs (granting of government benefits and payments).

In 2021, Italy also adopted its own strategy with individual actions and projects. More specifically, these actions and related projects are spread over three pillars, which are both conceptual and operational: talent and skills, research and applications.

The strategy envisages – as the strategy itself states – interventions for the Public Administration, aimed at creating data infrastructures to securely exploit the potential of big data generated by the PA itself, at simplifying and customising the offer of public services, and innovating administrations by strengthening the GovTech ecosystem in Italy. This latter measure, for example, envisages introducing periodic calls for tenders to identify and support start-ups offering AI-based solutions able to solve critical public sector problems. (See also above the details offered by Prof. Cucchiara).

6) *The use of AI in the parliaments*

Even in this more specific area, the investigation revealed that many countries have already embarked on the use of AI to improve certain activities of representative bodies.

As mentioned above (see, again, the hearing of Dr Maslej, on the AI Index of Stanford University), the analysis of parliamentary activities on AI, conducted in a sample of countries, shows that the mention of artificial intelligence in legislative procedures at the global level has increased by almost six and a half times compared with 2016. Italy is well placed: it has passed 9 AI-related measures, behind the United States with 22, Portugal with 13 and Spain with 10.

In the United States, for example, summarising and comparing bills before

the congressional committee begins their consideration is also done using ChatGPT. In South Africa, there is a pilot project for a conversational interface to assist Members of Parliament on the legislative process; in Brazil, there is one designed to consolidate methods for involving citizens in the drafting of legislation.

Not least in the light of these examples, the Committee concluded that there are many potential areas for AI intervention in Italian parliamentary work.

The first and most sophisticated area of intervention of AI systems is, as can be easily guessed, precisely that of producing parliamentary documentation. Rule 79 of the Chamber's Rules of Procedure prescribes that, during pre-legislative scrutiny, the standing committees must gather the most structured and complete information as possible (according to an updated and conscious interpretation of the 'to know in order to deliberate' principle) and that the Chamber's documentation services play an essential role precisely in this phase.

From this point of view, all AI systems can contribute to enhancing these activities, primarily with regard to the sources from which to acquire data, information and analyses (think, in particular, of comparative law aspects). In this sense, AI can improve the ability to find and organise qualified information, also by offering multimodal summaries.

Where required, AI systems can also prove useful in the initial drafting of texts and in comparing different legislative proposals.

The second main context that comes to mind is the work of individual parliamentarians, to whom IA (essentially in the form of LLM) can provide support in the preparation of documents in the process of preparing to perform their functions: for example, by means of systems to be used in the preparation of a legislative initiative or an instrument for policy-setting or oversight of government.

Thirdly, AI will be able to improve and enhance the channels of information, communication and transparency for the citizens (accountability). Data, which is already made widely available to citizens and scholars in open, interoperable and automatically processable formats, could also be made more easily searchable in natural language.

Points of convergence and divergence[1]

The experts ***agreed*** on the following points:

1. **Evolution of AI**: AI represents a significant advance over traditional programming, with systems capable of adapting to non-previously defined contexts.

2. **AI Plurality and Capability**: There are various forms of artificial intelligence, including assisted writing, which rely on huge amounts of data and learning algorithms.

3. **Economic and Academic Impact**: The massive entry of companies into the field of theoretical AI research has changed the traditional balance between academic research and industrial applications.

4. **Innovations and Applications**: AI has introduced revolutionary tools in various fields, with a wide range of applications.

5. **Quick transfer from research to application**: The features of AI systems allow for a quick transition from research results to business use.

6. **AI regulation and strategy**: The importance of public action for public-private sector integration and risk regulation and prevention.

7. **Role of the government in AI**: The government must act as regulator, user and orchestrator of AI, promoting cooperation between the public and private sectors.

[1] *The summary of the points of agreement and disagreement in the viewpoints is automatically generated through the Amaca GVS system, suitably adapted to the context in question and extracting the textual contents from the summaries of the speeches generated by an iterative algorithm and the processing of the results by first creating a further summary by main points and then identifying the concepts in which the experts agree or disagree or in some cases simply have different viewpoints. For the processing, Pinecone and Weviatei vector stores and LLAMA2-70b, GPT-4-Turbo (experimental), GPT-4 and GPT-3.5-Turbo models were used. We would like to thank Sciamlab s.r.l. for its collaboration on the processing of the summary using AI..*

8. **Digital Sovereignty and Transparency**: It is crucial to pursue digital sovereignty to ensure that Europe retains its strategic autonomy in the development and implementation of AI.

9. **Impact on jobs**: AI could change the labour market, pushing a shift away from the production of material goods to valorising and taking decisions about the value of things.

10. **Data security**: There is a strong emphasis on data security, ensuring that clients' data are not used for operational training and are only retained for a short period to prevent misuse.

11. **AI Risks and Opportunities**: While AI offers the potential to improve the efficiency and personalisation of public services, it also presents risks such as mass surveillance and reproducing existing inequalities.

12. **Bias and Abuse**: AI raises risks of bias and abuse, such as the production of deepfakes and the tendency to generate non-diverse representations of influential people.

13. **Industrial Domination and Geopolitics**: AI research is dominated by the USA and China, with a shift from academia to industry, which is now driving development.

14. **Increased Interest and Regulation**: Interest in AI is on the rise in both industry and politics, with an increase in the skills and the investment required. At the same time, there is also a global increase in regulation and in AI legislation.

15. **Responsibility and Ethics**: To manage the distributed responsibility between man and machine, machine ethics is needed. AI systems, especially those based on deep learning, present problems of opacity and distortion in data processing, which require attention.

16. **AI accessibility and Use**: AI can be used in the real world to simplify work and improve efficiency in many fields, such as document translation or content summarisation.

17. **Investment and Development**: It is important to continue to invest in artificial intelligence technology, since increasing size at computational and parameter levels leads to better performance.

Although there is a broad consensus on many aspects of AI, the experts presented some **disagreements** in their viewpoints:

1. **Impact on jobs**: Some experts view AI as a means of doing away with monotonous tasks rather than jobs, emphasising the possibility of new professions emerging. Others, however, emphasise the potentially negative impact on employment, with AI possibly replacing some jobs.

2. **AI Regulation**: While some experts argue for strong and detailed regulation of AI, others emphasise the importance of striking a balance between mitigating technological risks and regulatory flexibility for the development of new technologies.

3. **Role of Europe**: Some experts emphasise the importance of Europe not limiting itself to a regulatory role, but harnessing its capabilities to develop AI applications, stimulating innovative companies and start-ups. Others, however, emphasise Europe's role as a regulator, stressing the importance of digital sovereignty.

4. **Use of Data**: While some experts emphasise the importance of data security and the need to retain customer data for a short period to prevent misuse, others emphasise the need to feed LLM with extensive and accurate document bases to ensure that the information generated is true to reality.

5. **Responsibility and Ethics**: Some experts propose effective ethical-legal regulation, with the implementation of deontic algorithms in machine learning systems. Others, however, emphasise the need for a public debate on issues such as misinformation and the responsible use of AI.

6. **Rapid transfer from research to application**: Some experts point out that the characteristics of AI systems allow for a quick transfer of research results to corporate use. Others, however, point out that this rapid transfer can give rise to ethical, environmental and safety issues.

7. **Environmental Impact**: While some experts recognise the negative environmental impact of AI systems training, others highlight the progress made by AI for environmental protection.

8. **Role of AI**: Some see AI as an amplifier of human capabilities rather than a substitute, while others emphasise that AI will never completely replace human capabilities, such as the ability to take decisions.

9. **Transparency**: Some experts emphasise the importance of transparency and control of AI-generated content, while others highlight the problems of opacity and distortion in data processing by AI systems.

10. **Development of AI**: Some experts argue that increasing the size at the computational and parameter levels leads to better performance in AI. Others, however, point to the increase in costs in recent years, which has reduced academia's participation in new technologies.

11. **Control of AI**: While some experts advocate the need to create global security standards and systems to mitigate unforeseen risks, others emphasise the importance of keeping AI under human control and that policy decisions cannot be delegated to machines.

12. **AI applications**: Some experts see a wide range of applications for AI, while others focus on specific applications, such as assistance in writing software or processing legislative texts.

13. **Biases and Abuses**: Some experts point out the risks of biases and abuses in AI, such as the production of deepfakes and the tendency to generate non-diverse representations of influential people. Others, however, argue that AI can be used responsibly and transparently to prevent such problems from arising.

14. **Industrial Domination and Geopolitics**: Some experts point to the dominance of the US and China in AI research, while others emphasise the importance of a striking a global balance and commitment by all countries.

15. **Increasing Interest and Regulation**: Some experts point to the increasing interest in AI in both the industrial and political sectors, while others emphasise the need to strike a balance between the benefits of AI and the management of its risks and ethical implications.

PART II

Expert Contributions

Information society or control society?

Paolo Benanti
Pontifical Gregorian University

We are living in a society and an age characterised by the digital, the digital age, a complex period because of the radical changes that new technologies are bringing about. The Covid-19 pandemic accelerated a series of processes that had been radically changing our society for some time because it was possible to decouple content, knowledge, from its medium. The change of age we are passing through is being produced by digital technology and its impact on the way we view ourselves and the world around us.

To understand this challenge, we have to go back to where this transformation began. In a grainy documentary filmed at Bell Laboratories in 1952, the mathematician and Bell Labs researcher Claude Shannon is seen standings next to a machine he had built in 1950. At that time, it was one of the world's first examples of machine learning: a robotic maze-solving mouse called Theseus. The Theseus of ancient Greek mythology navigated the labyrinth of a Minotaur and escaped by following a thread he had used to mark his path. However, Shannon's electromechanical plaything was able to 'remember' the path with the help of telephone relay switches.

In 1948, Shannon introduced the concept of information theory in A Mathematical Theory of Communication, a paper providing mathematical proof that all communication can be expressed digitally. Claude Shannon showed that messages could be treated purely as a matter of engineering. Shannon's mathematical and non-semantic theory of communication abstracts from the meaning of a message and the presence of a human sender or receiver; a message, from this point of view, is a series of transmissible phenomena to which a certain metric can be applied.

His insights gave rise to a new, trans-disciplinary vision of reality: Norbert Wiener's cybernetics. For Wiener, information theory is a powerful way of conceiving nature itself. While the universe is gaining entropy in accordance with the second law of thermodynamics – that is to say, its energy distribution

is becoming less differentiated and more uniform – there are local counter-entropic systems. These systems are the living organisms and information processing machines we build. These systems differentiate and organise themselves by generating information. The advantage of this approach is that it allows cybernetics to exert secure control over the interdisciplinary field it generates and deals with: "cybernetics can already be sure of its 'thing', that is, of calculating everything in terms of a controlled process".

Beginning in the decade before World War II, and moving forward rapidly during the war and after, scientists were designing increasingly sophisticated mechanical and electrical systems that enabled their machines to act as if they had a purpose. This work intersected with other work on cognition in animals and early work on computer science. What emerged was a new way of conceiving of systems, not only mechanical and electrical systems, but also biological and social: a unifying theory of systems and their relationship to their environment. This shift towards 'whole systems' and 'systems thinking' is known as cybernetics. Cybernetics views the world in terms of systems and their purposes.

Cybernetics considers that systems achieve their goals through iterative processes or feedback loops. All of a sudden, leading post-war scientists were talking seriously about circular causality (A causes B, B causes C and, finally, C causes A). Looking more closely, scientists saw the difficulty of separating the observer from the system. For the system appeared to be a construction of the observer. The role of the observer is to provide a description of the system, which is given to another observer. The description requires a language, and the process of observing, creating language and sharing descriptions creates a society. Since the late 1940s, the more advanced research world began to look at subjectivity – of language, conversation and ethics – and its relationship with systems and design. Different disciplines were working together to study 'collaboration' as a control category.

Before that time, physicists had described the world in terms of matter and energy. The cybernetics community proposed a new view of the world through the lens of information, communication channels and their organisation. Cybernetics was born at the dawn of the information age, in pre-digital communications and media, shaping the way humans interact with machines, systems and each other. Cybernetics focuses on the use of feedback to correct errors and achieve goals: it makes the machine and the human being a sort of Shannon's mouse.

This is the level at which we have to take a closer look at the effects that all this can have on how humans understand and understand themselves and freedom. As discussions matured, the aims of the cybernetics commu-

nity expanded. In 1968, Margaret Mead was contemplating applying cybernetics to social problems: "As the world scene widens, there is a continuing possibility of using cybernetics as a form of communication in a world of increasing scientific specializations. [...] we ought to look very seriously at the current state of American society within which we hope to be able to develop these very sophisticated ways of handling systems that are, indeed, in dire need of attention. Problems of metropolitan areas, [...] The interrelations between different levels of government, the efficient redistribution of income, [...] the linkages necessary among parts of large industrial complexes."

The cybernetic approach, as Martin Heidegger would emphasise in rereading Wiener and the work of the cyberneticians, reduces human activity itself, in the plurality of its configurations, to something functioning and controllable by machine': "man himself becomes 'something planned, that is, something controllable" and, since such a reduction is not possible, he is bracketed as a disturbing factor in the cybernetic calculus".

Fabris notes that in his analysis of the cybernetic phenomenon, Heidegger constantly keeps the Greek matrix of the word in mind and gives pride of place to this aspect, rather than – for example – the central notion of feedback, as a means of understanding and explaining the characteristics of such a 'non-discipline discipline'. According to Heidegger, cybernetics indicates the advent of a process of control and information within the different spheres of the sciences. Command and control (Steuerung) is understood first and foremost, from a hermeneutic point of view, as that perspective within which our relations to the world are regulated.

However, in the hearts of cyberneticists, that is to say, the scholars who are the fathers of the computer society, artificial intelligence and all these impressive developments that the digital is bringing about in our lives, there may have been the promise of an even greater purpose.

Gregory Bateson, Margaret Mead's first husband, said in a famous interview that what excited him about discussions on cybernetics was that: "It was a solution to the problem of purpose. From Aristotle on, the final cause has always been the mystery. This came out then. We didn't realize then (at least I didn't realize, although McCulloch might have) that the whole of logic would have to be reconstructed for recursiveness".

Norbert Wiener, who is considered the father of cybernetics, laid the foundation for what we know today as AI, influencing aspects such as information processing and pattern recognition. Cybernetics had a profound initial impact, but over time was partly supplanted by AI, which took up and further developed the cybernetic programme of the unified study of organisms and machines, but on a very different basis.

In the 1980s, with the revival of neural network research and the advent of connectionism, there was a renewed interest in cybernetic approaches within AI, with the aim of addressing some of the difficulties encountered in its early years of development. Furthermore, cybernetics has contributed to the development of artificial systems suited to perform specific tasks, such as artificial neural networks that learn and evolve, and which we find in many technologies around us today.

Cybernetics and AI are connected through their common history and their purposes of understanding and simulating control and intelligence mechanisms in both natural and artificial systems. Cybernetics has provided a theoretical and methodological framework that has influenced the development of AI, and AI has extended and taken these concepts forward, to new levels of complexity and application.

What we are interested in emphasising here is the cybernetic matrix of AI that could influence social relations by transforming AI into a system of social control that would clash with the principles of rule of law. Norbert Wiener's Cybernetics was one of the most influential scientific books of the 20th century. In particular, the theoretical strand of the early French reception of cybernetics fed directly into structuralism, while its operational strand, involving the mediation of a new technical culture, made an important contribution to later thinking and debate on science and technology in post-war France. Dominique Dubarle's 1948 contribution entitled "Vers la machine à gouverner?" in which he questioned whether the mechanical manipulation of human reactions could one day create 'the best of all worlds', remains famous.

The challenge is therefore to enable innovation to become a form of development and remain sustainable in the current democratic environment.

Digital sustainability

If the information society, by means of digital feedback, can actually place man in a condition of control by the machine (be it electronic or algorithmic) and if the cybernetic relationship in its most radical form of the man-machine symbiosis can in fact negate the need to hypothesise final causes in action, a dystopian scenario appears on the horizon in which the information society inevitably collapses into a control society. Analysing the digital society allows us to reflect on the link between causes, necessity and freedom that the digital realises in its form of political implementation and calls into question the very possibility of our destiny dependent on free will.

This form of cybernetic digitisation, which can be defined as 'strong' in order to emphasise how this is a possible form of society if forms of digital sustainability are not put in place, risks eliminating the very possibility of posi-

tive freedom. In political language this term is understood, going back to Bobbio's reflections, as "the situation in which a subject has the possibility of directing his will towards a goal, of making decisions, without being determined by the will of others. This form of freedom is also called 'self-determination' or, even more appropriately, 'autonomy'. [...] The classic definition of positive freedom was given by Rousseau, for whom freedom in the civil state consists in the fact that here man, as part of the social whole, as a member of the common ego obeys no one but himself, that is to say, he is autonomous in the exact sense of the word, in the sense that he makes laws for himself and obeys no laws other than those he has given himself: "obedience to the law we have prescribed for ourselves is freedom" (Contrat social, I, 8).

This concept of freedom was taken up, through the direct influence of Rousseau, by Kant, [...] in the Metaphysics of Morals, where legal freedom is defined as 'the faculty of not obeying any law other than that to which the citizens have given their consent (II, 46). [...] Civil liberties, the prototype of negative liberties, are individual liberties, i.e. inherent to the individual: historically, in fact, they are the product of struggles to defend the individual considered either as a moral person, and therefore having a value in itself, or as a subject of economic relations, against the intrusiveness of collective entities such as the Church and the State [...]. Freedom as self-determination, on the other hand, is generally referred to in political theory as a collective will, whether this will be that of the people or the community or the nation or the ethnic group or the homeland'.

In the light of these brief reflections, it seems to us that we can say that the epistemological matrix of control inherent in the development of the digital as a cybernetic information culture is still implicit and unreflected in the technical applications of the information society. It is up to civil society to create a debate for the processes of digital technological innovation to be questioned.

If we continue to look at technology only as innovation, we risk failing to perceive its scope for social transformation, and consequently being unable to direct its effects towards the good.

In order to be able to speak of innovation as a good, and to be able to direct it towards the common good, we need a word to describe how and which characteristics of progress contribute to the good of individuals and society. This is why, with Sebastiano Maffettone, we have decided to adopt the category of digital sustainability.

The idea of digital sustainability focuses on a far-reaching concept, encompassing the sustained expansion of individuals' choices and the equitable improvement of their welfare prospects. To speak of digital sustainability is not to put technical capability at the centre of attention, but

to keep the human being at the centre of the debate and as the end that describes progress.

Ethically using digital technology today, respecting human ecology, means trying to turn innovation into a sustainable digital world; it means directing technology towards and for human development, and not simply seeking progress as an end in itself. Although it is not possible to think and realise technology without specific forms of rationality (technical and scientific thinking), putting digital sustainability at the centre of interest means saying that technical-scientific thinking is not enough.

In conclusion, for there to be freedom, we need conscience and consciences must question technology by directing its development towards the common good.

Anthropocentric Artificial Intelligence systems for public institutions

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1. Risks and opportunities of contemporary artificial intelligence

It is beyond dispute that Artificial Intelligence has become the most innovative, powerful and talked-about information technology of the decade. Proof of this can be gauged from the amounts that have been invested in recent years by companies producing Artificial Intelligence software and hardware, especially in the USA and China; it is also obvious from the increasing investments that manufacturers and producers of tangible and intangible assets (first and foremost, financial companies) are devoting to the adoption of solutions based on machine learning, including Foundation Models or Large-Scale Models pre-trained for human and documental interaction, and of specific models trained on proprietary data.

AI models are now being deployed in companies to improve production, design new products and for management, with its widespread deployment around the world and recently also in Europe and Italy. AI is even showing its impact in making responses to major societal challenges, such as health, mobility, security, urban planning, climate forecasting, education, justice, environmental protection and management of social goods: in fact, every area of public administration.

AI has not been adopted uniformly in government service internationally, but is clearly proportionate to the degree of public investment that has been devoted to AI research and its applications, also through public-private partnerships. In view of the critical issue of its applications, its adoption must weigh up the risks and benefits, especially if more recently developed solutions have not yet reached sufficient technological maturity. On the other hand, the capabilities of AI systems – in conjunction with human expertise –

cannot be underestimated, especially with regard to the efficient analysis of documentary data, decision-making support and predictive models, as emphasised in the Ada Lovelace Institute's recent report on the use of Foundation Models in the UK public sector.

One of the aspects that also emerges from this report is the advisability or rather the strategic necessity of keeping know-how, data, expertise and technological sovereignty. In this, Europe is in a rather critical situation, despite its undoubtedly significant scientific expertise, with only a limited number of local companies capable of tackling the massive challenges thrown down by AI, especially in terms of investment. The European community is investing in AI research, both in its foundational/theoretical aspects and in its applications, having started with a major call in 2018 for networks of centres of excellence (in which many Italian centres participate) that is continuing with many Horizon Europe initiatives on European Lighthouses and with application projects in the fields of health, defence etc. There is no doubt that private investment in AI production is not so massive in Europe and in Italy, and that the projects being financed by national governments are still infrequent. France supported an investment of around 3 billion euros in 2022 for a large multilingual, open-source foundation model, BLOOM, involving more than 1,000 researchers from dozens of countries, with very interesting results, even though they could not be compared with those of the large big-tech companies which have produced such systems as ChatGPT, Claude, LLama or Gemini with investments of a higher order of magnitude. In Italy, investments are still limited if we exclude a few PNRR initiatives started by the previous government (extended FAIR partnership, the funding of national PhDs in AI), but the current government's interest has been clearly spelled out and backed up by its commitment to rewrite the Italian Artificial Intelligence Strategy for the three-year period 2024-2026. This emphasis on public investment is necessary when considering the potential application of AI to public data and assets of the kind in the possession of the government sector, and especially of parliamentary authorities, considering the growing power of modern Artificial Intelligence models and at the same time the potential risks inherent in the technology. There is a great deal of talk about the risks of AI, in some cases voiced a priori and pre-judging the issues, but mostly with good reason. Such sudden and disruptive technological developments have created gaps in security, model ethics, process control and reliability of results.

Intelligent systems based on machine learning base their modelling on statistics and are heavily dependent on the design of neural computing architectures and – at least in the current generation – still lack any robust digital

abuse prevention systems, for example, to create robust safe checkers capable of working in the knowledge modelling space of the system, to avoid the generation of violent, anti-democratic, anti-tolerance, anti-gender-balanced data. Furthermore, learning systems are highly dependent on the data they are trained on. In the case of small systems, this can lead to inaccurate results, and in the case of large-scale systems, to 'hallucination' issues (that is to say, inventions in responses that are statistically less present in the learning data) or, conversely, to problems of copyright and the confidentiality of the data used for learning, which are often used without proper authorisation. These limitations, which will only be partially resolved in the new solutions (being an inherent part the learning paradigm itself), are so clearly known at both the engineering and political levels, that they have led to the worldwide need for regulation, as evidenced by the exceptional result of the recently adopted European AI Act, and the recent ISO/IEC 42001:2023 Regulations on the international standard for Responsible AI.

These difficulties and the very real need for regulation and control must not, however, limit the will to implement and adopt new solutions, even with experiments that the European Union itself has planned with the sandbox model that has already been tested in Spain; it is to be hoped that the institutions and the Italian public sector will also be able to exploit the potential of AI to the full, both in specific, small-scale models, trained ex-novo on proprietary data, and in large-scale models, retrained or refined using Italian data. This can be done at different levels, either by adopting established market solutions, revised to retain data ownership and at the same time adapting them to the needs regarding understanding and verifying the results, or by experimenting with new solutions, also in collaboration with Italian research centres and national start-ups. The use of AI in the government and public institutions is a crucial step towards post-digitalisation, and de-bureaucratisation (currently limited by the capabilities of individuals in the absence of enabling technologies) and improved transparency of the democratic process.

2.Opportunities for Governments and Parliament: from Intelligent Document Analysis to Human Behaviour Understanding

Analysis to Human Behaviour Understanding

There are various fields in which AI can be adopted in government, public institutions and parliament, and some of them relate to Intelligent Document Analysis, the leading theme of generative AI on language and multimodal documents, and others concerning Human Behaviour Understanding for the interaction and streamlining of work in such institutions as the parliaments, in

the crucial need to safeguard personal rights.

The case of Chat GPT, which is now widespread worldwide (with hundreds of millions of users), has already demonstrated the capabilities of neural networks for understanding digital written texts or texts automatically transcribed from speech, and for interacting, answering questions (Q&A), and summarising new foundational systems and modern LLMs. Their ease of use and flexibility in creating by-products for specific uses are making them popular everywhere, while maintaining the aforementioned rightful distrust of their lack of total reliability and fairness. Added to this is the fact that most of today's large LLMs are foreign-owned: given the sensitivity of government-owned data, and the justifiable problems of the privacy and security of the public goods, it is clear that relying solely on foreign tools not only fails to support domestic production, but also makes information tracking and the possible reuse of domestic data impossible, unless - perhaps - explicit and precise agreements are concluded with the producers. The fact remains that as 2024 dawns, ad-hoc solutions are being implemented to overcome these limitations, as well as safe fine-tuning and knowledge distillation models on proprietary data, and other state-of-the-art technical solutions.

Leaving aside the technological details, Table 1 provides possible examples for adoption to aid policies, from the decision-making/law-making phase, the documentation phase and, above all, to support the staff.

Models of Discriminatory AI	Systems capable of classifying, categorising and distinguishing between unstructured documents (text, or text and images) and semi-structured documents from tables or numerical data, providing categories that have also been learned and are customisable by individual experts, capable of respecting the different mental categories inherent in political debate.
Document Retrieval Models	Retrieval of specific information (precise entity matching models, such as names, law numbers, facts etc.) from government documents, or of "similar" information in terms of semantic, time-related, or even syntactic consistency in the formulation of questions and answers in documentary acts. Retrieval systems have been devised for decades in structured databases, but only now with LLM models they can be addressed on a large scale if sufficiently large quantities of documents for training (e.g. millions of pages) are available, or if prompting models with selected documents are available.

Models of correlations and inferences	Models capable of finding correlations between parts of documents such as legal texts or preparatory materials, or different documentary materials, including those taken from public communication channels (e.g. RAI materials, news, the Web), correlations and modifications over time or in different application contexts.
Generative AI Models	Models for generating answers to specific questions, generating summaries (summarisation) of documents or parts, also customisable according to individual needs.
Predictive Generative AI models	Systems capable of generating predictive inferences, such as financial trajectories, exploratory contexts of inferences, answers to 'what if' questions, to a specific design integrating machine learning-based systems and rule-based systems defined by domain experts.

Table 1.
Use of modern AI models for Intelligent Document Analysis

These are activities that cannot be conducted directly on a large scale by people unaided, due to the costs, issues and volumes of data involved. They are possible and feasible solutions today, but they require huge investments both for the preparation of the data, the technologies and their testing, and for the entire lifecycle of software products for the government sector, as well as for the creation of ad hoc platforms.

While the above-mentioned systems, as mentioned above, results specific and non-general design and implementation to meet the requirements of reliability, ethicality, transparency and robustness/security that the environment demands, many other AI systems to address specific problems are already on the market or can be created in the short term using state-of-the-art research technologies.

HBU models for efficiently running meetings and parliamentary sessions	Person analysis systems are becoming more and more effective, to counting people in public areas, to analysing posture (e.g. recognition of standing/sitting people), lip-reading to automate transcription, intelligent video conferencing systems.

Models of collective HBU	Systems for recognising the presence of people even in unknown environments are now reliable (much more than the video surveillance experiences of the past) because they are trained on millions of simulated data in many environments. They can be used automatically for security purposes (without the need for constant costly-human control and often lacking in attention if continuous over time), for energy efficiency (e.g. by shutting off lights or selectively heating), for mixed-mode session management (e.g. automatic counting of the legal quorum) totally compatible with the confidentiality and privacy constraints and the AI Act.
Customisable biometric systems	Selective biometric recognition systems of personnel only, avoiding any privacy-concerning issue without any storage or information of other individuals and removing unsolicited data; customisation of single multimodal biometric authentication (face, voice, speech patterns).

Table 2. *Use of modern AI models for Human Behaviour Understanding (HBU)*

These are systems that might evoke bias on account of Orwellian scenarios of mass control, but they are extremely effective if employed wisely (for authentication at airports) and especially in privacy-preserving mode by default. In fact, modern generative AI systems (based on Transformers and tracking-by-detection models) can selectively record only the speaker, automatically obscuring any other person even close by and thus avoiding the possibility of any natural and perhaps non-contextualised behaviour (e.g. reading a piece of data from a mobile phone, or closing one's eyes) might be misconstrued, or simply to ensure staff privacy.

The new generations of HBU systems go beyond the concepts of collective surveillance and have been redesigned to learn from synthetic data (without collecting personal data), are privacy-preserving, and can be deployed in various areas for the security and management of public places. Their adoption would provide a positive example of concern about security and the sustainable management of public functions, if *ad hoc* investments are made to install systems validated not only for GDPR but also for the provisions of the new AI Act.

3. Conclusions

These comments offer only a few examples of how current Artificial Intelligence systems are already being employed and can also be successfully deployed in the public sector and, above all, wherever interaction between people and understanding and managing digital data lie at the very heart of democracy. This is where European and national concepts of anthropocentric Artificial Intelligence come to the fore, both as a target of interest and as a means of safeguarding human, ethical and sustainable values in the society of the new millennium.

Adoption and impact of Artificial Intelligence systems for Parliament

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1. From knowledge- and logic-based AI to generative AI

Artificial intelligence encompasses various applications such as machine learning (ML), natural language programming (NLP), computer vision and robotics. In recent years, the potential of AI in evidence-based public policy-making has gained wide attention among practitioners. In various experiments, the use of AI has significantly increased the ability to collect, analyse and interpret data. The fact is that AI can analyse large amounts of data, identify patterns and trends, and generate insights to inform decision-making.

For classification purposes, three main types of AI are commonly distinguished: rule-based AI, logic-based AI, and generative AI (the latter having emerged very rapidly just recently).

Rule-based AI, also known as symbolic AI or knowledge-based AI, develops applying logical rules and symbols to represent knowledge and facilitate decision-making and problem-solving. A rule-based system is a computer program that embodies knowledge belonging to a particular domain and can use the rules created with the human intellect to solve problems in that domain, problems that in real life would require the assistance of a human expert. A knowledge-based system must be able to account for its results (Rijckaert, Debroey and Bogaerts, 1988). With this approach, a human expert creates a set of rules that the artificial intelligence system applies to take decisions based on the available data.

However, as the scope and applicability of this type of AI has increased, a major constraint has emerged, as too many rules have to be encoded if a system is to perform a useful task. This generates increasing costs and slows processes down: as a result, logic-based AI has started to take over and attract attention.

Logic-based AI, also known as sub-symbolic or connectionist AI (Ben-

derskaya and Zhukova, 2013), is based on the use of artificial neural networks that simulate the way the human brain processes information. In logic-based AI, the AI system learns to recognise patterns and make decisions based on the data presented to it, instead of relying on predefined rules. The techniques associated with this type of AI are machine learning (ML) models, as both rely heavily on neural networks (Ilkou & Koutraki, 2020). Logic-based AI, in general, uses neural networks as a basic model to simulate reasoning processes, while ML uses neural networks as a key tool for learning from data, through deep learning models that simulate the human brain. This approach has been used in several public policy applications, such as predicting epidemic outbreaks (Malik et al., 2021) or identifying flood-prone areas (Tamiru and Dinka, 2021).

Rule-based AI is often deemed more transparent and easier to interpret, since the decision-making process is based on explicit rules. Logic-based AI, on the other hand, may be better suited to deal with complex problems where the rules governing decision-making are usually not clearly explained or understood. Each type of AI has its strengths and its limitations, and the choice of which type to use depends on the particular requirements of the decision-making process.

Recent trends in AI indicate rapid developments are coming in this field. In particular, generative AI has come to the fore as a sub-field of AI that can generate new and original content, such as text, images or audio, based on existing data. This third type of AI may bring substantial implications for evidence-based decision-making. By exploiting generative AI tools, decision-makers can explore and generate alternative scenarios, simulate outcomes or create synthetic data to augment decision-making processes. These tools have the potential to aid scenario creation to understand the problem, find new and potential outcomes to inform policy design and planning, conduct risk or impact assessments, and create creative content to better communicate the outcomes of public programmes and policies.

2. The potential impact of AI on decision-making and law-making

AI-use offers a valuable opportunity to improve decision-making and law-making in terms of cost-effectiveness, potential, scale and flexibility. More specifically, the use of AI systems will be able to offer valuable help to identify patterns, create scenarios, infer new outputs, improving communication, optimising operations, using past and present data to avoid repeating errors, and automatic detection for monitoring purposes.

These opportunities are related to the different functions that advanced

AI systems are capable of performing, and are applicable and relevant to all stages of the policy-making cycle (decision-making and law-making). Here, they can be extremely useful in informing decisions and providing key inputs for the legislative process. In particular, it is worth emphasising how they enhance decision-making processes by facilitating study and documentation, understanding and analysis, decision support and planning, communication and involvement, optimisation and effectiveness.

One crucial aspect of the decision-making and legislative process is having knowledge of past acts and studies and activities already undertaken by EU institutions and different countries, especially the EU countries. AI can help in this phase thanks to its multilingual search and summarisation possibilities (Quintarelli, 2022).

One further aspect concerns understanding the problem and its in-depth analysis. AI algorithms can support this understanding and analysis by identifying patterns within large amounts of data, revealing hidden relationships and dependencies that may not be evident by conventional analysis methods. By identifying these patterns, decision-makers can gain a more all-round understanding of the dynamics of a particular situation (Giest and Klievink, 2022).

Furthermore, AI can exploit past and present data to avoid repeating errors. By analysing the historical data, AI can identify patterns of errors or failures, providing decision-makers with information on how to prevent similar errors occurring in the future (Paredes, 2018). This enables policymakers to take proactive measures to mitigate risks and improve the effectiveness of their decisions. At the same time, the adaptive nature of AI – and especially of new deep learning and generative models – allows for a real-time analysis of present data, enabling decision-makers to make timely changes and optimisations (Ramalingam et al., 2017). By continuously monitoring trends and changing patterns in the data, AI algorithms can provide up-to-date insights that inform the understanding and analysis of given circumstances, improving decision-making processes.

Overall, the insight and analysis capabilities of AI bring significant benefits to evidence-based decision-making. By revealing hidden patterns, providing a comprehensive view of complex dynamics and learning from historical data, AI provides decision-makers with valuable insights and knowledge. This facilitates more informed decision-making and law-making based on a deeper understanding of underlying factors and trends.

Another important opportunity for using AI in decision-making is to support planning and impact analysis. AI techniques enable decision-makers to simulate various hypothetical situations. This can include the use of predic-

tive analytics, which can help decision-makers anticipate future trends and identify potential risks (Bradt, 2009), as well as give data-driven guidance on the best course of action based on the available data, or suggestions for improvements or optimisation. One major advantage of AI systems is their ability to create and analyse scenarios (Papapostolou, Karakosta and Doukas, 2016). Decision-makers can use AI algorithms to simulate different hypothetical situations, imagining new solutions and evaluating their potential outcomes. This allows for a comprehensive exploration of the potential impacts and risks associated with each scenario, providing a clearer understanding of the potential consequences of possible policy choices. In practice, AI systems enable inferences to be made about outcomes based on historical and real-time data, generating knowledge about the potential impacts of different policy actions (Wood et al., 2022). Decision-makers can exploit this knowledge to anticipate and assess the potential outcomes of their decisions, enabling them to make better-informed choices and develop strategies in line with the desired outcomes.

3. Recommendations and suggestions

From what has been briefly submitted in this document, it is clear that the adoption of AI systems can contribute to optimising and improving the effectiveness of parliamentary business and improve decision-making and law-making. AI algorithms can optimise resource-allocation and the efficiency of operational and decision-making processes (Panch, Szolovits and Atun, 2018). This can influence many aspects of operations, such as resource allocation, scheduling, inventory management and logistics. Furthermore, AI can identify opportunities for optimisation by analysing historical and real-time data, revealing inefficiencies and recommending adjustments to maximise performance and effectiveness. This can improve the effectiveness of policy implementation, ensuring that resources are used efficiently and that decisions are made based on accurate and timely information.

However, while the private sector has made significant strides forward to exploit the power of AI to improve operational efficiency and performance (Andrade and Tumelero, 2022; Ahmad et al., 2021; Beşikçi et al., 2016), the public sector is still at an early stage in this journey, as evidenced by several studies and in particular the work of the European Commission's Joint Research Centre (see AI Watch - Misuraca and van Noordt, 2020). Because the adoption of AI technology in the public sector has been relatively slower and more complicated for a number of reasons, such as legal and ethical considerations, resource constraints and the need to adopt transparent and accountable mechanisms (Misuraca et al, 2020, Misuraca and van Noordt,

2020). In this context, Parliament's role becomes crucial not only as a driver for the adoption of AI systems in the public sector, but especially for experimenting with the use of AI systems to optimise resource-allocation, improve the quality of the legislative process and the outcomes and impact of public policies, as well as the overall governance of digital policies.

At the same time, it must be remembered that using AI for decision-making poses a whole new range of completely new challenges, which, like the opportunities that have been shown here, are applicable and relevant to every stage in the governance/policy-making cycle. It is therefore important to consider way of preventing these risks throughout the whole cycle when applying automated systems to and within it. One particular key concern is the risk of inaccuracy and bias in AI algorithms, which can lead to unfair or discriminatory policy decisions based on incomplete and misleading knowledge. To avoid this, AI algorithms must be built from the outset within an ethical framework that will ensure that the AI is transparent, accountable and explainable.

Furthermore, it should be borne in mind that the use of AI systems demand a huge outlay of resources, both human and financial, and that sometimes it may not be worthwhile or feasible to go ahead with it. Lastly, it is necessary to ensure that the models used are accurate and that the quality of the data is assured and guaranteed; wherever indicated, a human person should be included in the loop in order to minimise the risk of errors and omissions, following the 'redress by design' approach (cf. AIHLEG Ethical guidelines & policy guidelines).

Returning to the potential benefits that AI systems can bring to decision-making and law-making, and particularly in respect of the Italian Parliament, due account must be taken of the key role that automated AI systems can play to improve communication and participation. For AI-based tools are able to collect, analyse and interpret feedback from citizens, experts and other stakeholders, providing policymakers with a more thorough understanding of public sentiment, needs and preferences. This inclusive approach fosters greater participation and helps to ensure that policies are more responsive and relevant to the people's needs. Then, looking ahead to the future, it is inconceivable for parliaments around the world might be able to avoid harnessing the potential of digital technologies and AI systems to redesign mechanisms for citizen participation and engagement, not least to address the growing disinterest in politics and disinformation on important national and international issues.

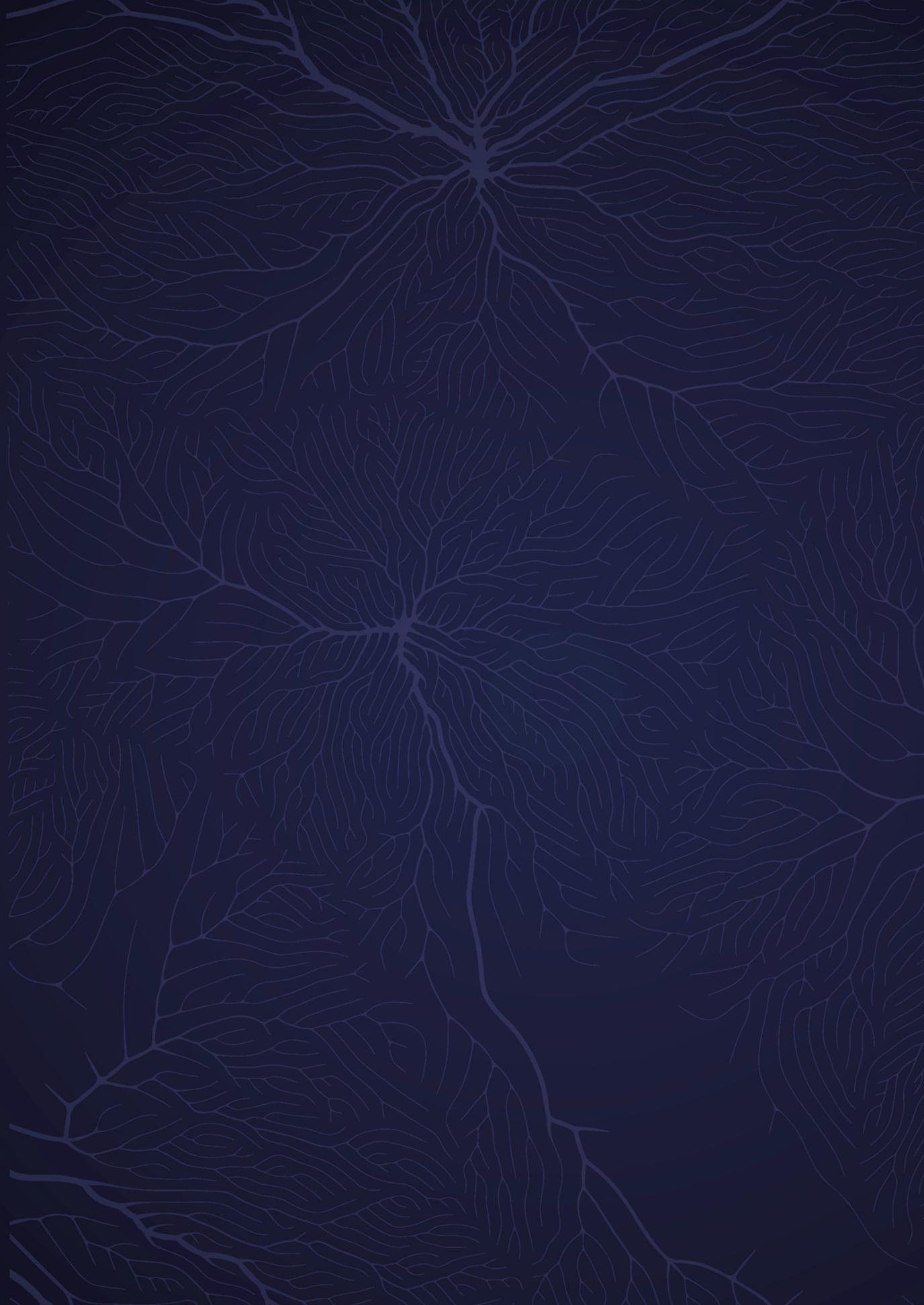
From this point of view, apart from aspects relating to optimising resources and improving the effectiveness of internal decision-making on

whose potential we have focused in the analysis given in this paper, there are other important implications – which deserve more in-depth study – concerning the opening up of parliamentary work to the world outside and participation in the legislative process using advanced AI systems right from the stage of investigating citizens' requests and opinions.

Despite the fall-off in people's confidence in the traditional representative institutions and political players, individuals are naturally willing to engage in the public sphere. Digital technologies and AI in particular offer further opportunities to express this engagement: citizens take part in online conversations, consultations and deliberations, contribute online to the causes they support, including with financial donations, and they share their ideas on digital platforms that help to hold the public institutions to account. In recent years, forms of 'deliberative democracy' have increasingly come into being to complement representative democracy, enhancing the transparency and inclusiveness of public decision-making at all levels of government. The digital transformation is offering a new set of tools for deliberative democracy, contributing to spreading it more widely.

It would therefore be interesting to experiment with new ways of engaging the participation of experts, stakeholders and citizens in parliamentary decision-making and law-making processes in a clearly regulated and transparent manner. For instance, developing and using new AI-enabled mechanisms to extract, aggregate and visualise policy arguments and legislative proposals may make it possible to transform unstructured user-generated content into valuable repositories of useful information knowledge about the issues being deliberated. These repositories can help stakeholders to keep track of the ongoing deliberation process and policy makers to understand the impact of individual and collective choices and behaviours in specific public policies and/or geographic areas, interest groups, etc. Visual tools can help reveal the structure and dynamics of the deliberation process, identifying key thematic strands, enabling experts and stakeholders to track trends within and across communities, and providing a real-time assessment of the outcomes of large-scale deliberation and participation processes in terms of overall impact and specific involvement metrics. These mechanisms could be applied to content structured through dynamic knowledge graphs, with the purpose of easing the limitations of traditional knowledge representation and polarised reasoning patterns between different political and pressure groups. Strengthening evidence-based decision-making processes and involving more experts and representatives of different stakeholders, as well as potentially all interested citizens, would significantly improve decision-making and law-making. The wide variety of knowledge, expectations and

views made available in this way could be exploited to improve the quality of the debate and consequently help to hammer out wide-agreed policies with a greater impact.



PART III

The use of AI in Parliaments

AI use in the Italian Chamber of Deputies

AI technologies were first introduced in the Chamber of Deputies in the 1990s and this has continued along a path that has taken account of innovations in the scientific and business spheres. The introduction of these technologies was embedded into the Administration's working procedures in order to automate certain processes and to make wider use of the data managed both internally and through the initial bases made available to users of the first published website.

The first step was the automatic mass classification of parliamentary acts, with a focus on parliamentary control and policy-setting instruments. To this end, a model was trained, and the outputs were subject to human supervision to confirm the classification elements. Over time, this process was refined and became fully automated, feeding into the specialised databases available on the Chamber's website.

A major breakthrough occurred in more recent years with the introduction of automatic speech recognition systems (ASR) for the production of parliamentary reports. Here, the Chamber of Deputies made a pioneering choice that redesigned the process of producing these documents. The ASR technology, acquired from third parties, has been trained and customised (and is still subject to regular fine-tuning) and has been incorporated into a process that from transcription leads to the creation of the master copy of the traditional parliamentary printout, which can be accessed in various formats directly from the parliamentary website. This internal process is then completed by improving the transcript with classification and metadata elements that make the reporting documents a veritable data mine. This innovative approach has gained recognition both nationally and internationally, becoming a model for other countries.

The Chamber, in collaboration with the European Institutions, then moved into the area of machine translation to publish sections of its website in English. For this purpose, the e-translation system developed by the European Institutions was tested and subsequently used.

In 2019, the Chamber collaborated with the Roma 3 University team that had carried out the 'In codice ratio' project (which focused on the manuscripts of the Vatican Apostolic Archive) to explore the possibility of automatically transcribing historical manuscripts, paving the way for accessing and

enhancing the documentary heritage of the Chamber's Historical Archive.

Since 2020, an automatic transcription solution has been implemented for the real-time subtitling of parliamentary sessions broadcast on the Chamber of Deputies' web tv site, in order to ensure greater accessibility to the work of the Floor of the House also for specific categories of users.

The most recent application of artificial intelligence algorithms is for amendment proposals related to bills being considered by the parliamentary committees and the Floor of the House. As part of the complete digitisation of the parliamentary consideration of bills, amendment files can be created and sorted very quickly and efficiently by technology, enhancing the contribution of specialised operators who are freed from performing basic preparatory tasks. Here again, technology has been applied to a process to streamline and enhancing human activities. This solution has received international attention, notably during the Inter-Parliamentary Union seminar last October dedicated to the transformation of parliamentary work through AI, as well as during the recent Conference of Secretaries General of EU Parliaments.

In collaboration with the National Consortium for Informatics (CINI) and the Artificial Intelligence Laboratory of the University of Udine, a system has been developed, now in the prototype stage, that can automatically attribute the main semantic identification sectors and classes to the content of documents in order to facilitate the identification of related content (automatic classification of texts using the multilingual and EuroVoc multidisciplinary thesaurus).

Finally, cybersecurity efforts were stepped up and various artificial intelligence solutions for security event correlation have been implemented at the Security Operations Centre of the Chamber of Deputies.

In conclusion, the gradual phasing-in of artificial intelligence technologies in the Chamber of Deputies has not only modernised in-house processes and made them more efficient, but it has also opened up new frontiers for accessing and analysing parliamentary information, demonstrating the transformative potential of technological innovation in the legislative environment.

A comparative overview of AI-use in Parliaments

Ernesto Belisario
Lawyer and artificial intelligence expert

Background and methodology of the investigation

In order to reconstruct as complete a picture as possible of the state of the art, it was felt appropriate to carry out research into the possible use of artificial intelligence-based solutions (especially generative AI) by parliaments in other countries, with particular reference to activities supporting the law-making function.

These data are crucial for assessing the decisions made internationally, and, where they have been in place for some time already, the impacts of those decisions.

The analysis given in this section focuses, first of all, on the experiences of AI-use in other EU Member States and in the EU institutions, and was then extended to include a few non-EU countries.

Below is a brief summary of the results, aggregated into groups of activities for which AI has been most frequently used.

What has emerged from the investigation is that for several years already there has been a widespread international roll-out of algorithms in parliamentary business, and, in some cases, also of AI-based solutions. According to a study by the Inter-Parliamentary Union (IPU) (World e-Parliament Report, 2020), by 2020 only 10% of the world's parliaments had adopted AI-based technologies (6% in legislative drafting systems). Nevertheless, the use of these systems will become increasingly important for parliaments and AI is the most anticipated technology (45% of parliaments were considering it in 2020). According to the 2022 Global Parliamentary Report, "With near-universal access to and use of the internet, and the rapid growth of social media, today's public have different expectations when it comes to participation and responsiveness. The era of instant and constant communication challenges parliaments to keep up with new ways of engaging."

The practices reported in this section reflect the efforts of different parliaments to introduce AI solutions aimed at improving the efficiency and

transparency of parliamentary work.

Compared with the use that has been made of AI in recent years, however, thanks to generative AI, a new level of AI integration can certainly be undertaken: the latest systems can now interact directly with people, generate new content and can be used to perform complex analyses.

At present, however, the use of generative AI solutions is still embryonic or experimental in many countries, restricted to the use of chatbots, while the use of these tools for the preparation of draft legislation has mostly occurred at the initiative of individual parliamentarians. The structured use of generative AI technologies to support parliamentary work must be appropriately prepared and must be subject to passing tests that demonstrate that the principles set out in Part IV below are guaranteed.

This is evidenced by the prevalence, at this stage, of initiatives relating to setting up working groups or committees to look into issues relating to the implementation of generative AI systems and the drafting of guidelines for parliamentarians and offices (as in the United Kingdom, the USA and Singapore). These guidelines provide clear instructions for users to avoid entering confidential information into these applications and stipulate the need to review all AI-generated work to guarantee accuracy and reliability.

The findings of the investigation

Below are the main activities for which artificial intelligence tools are currently being used for parliamentary business. For each area, the cases considered most pertinent have been cited.

Drafting legislation

In the United States, the House of Representatives uses an AI tool based on NLP (natural language processing) technology to automate the process of analysing differences between bills, amendments and current statutes by interpreting the quotations of provisions described in the bills, in order to retrieve those provisions and give instructions for amendments. The tool currently operates with a 90% accuracy level with human feedback that will gradually improve.

Data and information management to support Members of Parliament

The European Parliament has adopted several tools that use AI to enhance efficiency and effectiveness, including chatbots that automate pro-

cesses in different areas, helping to provide rapid and effective answers to questions. In addition, the European Parliament uses an automated system capable of summarising texts and an editor to provide short summaries, facilitating the understanding of complex documents.

The Austrian Parliament, for example, uses EULE Media Monitor / 360°Topic-Monitoring, an artificial intelligence-based solution developed with the aim of providing support for parliamentarians to stay up-to-date. Providing access to a web-based platform, EULE enables MPs to obtain accurate and reliable information to enable them to perform their duties in the best possible way, saving time and resources. The ultimate aim is to ensure that they are able to access the relevant data and news at the right time.

The Digital Sansad system has been implemented in India. It is a tool for Members of Parliament, officials and citizens, with a wide range of advanced functionalities. Notable among these are displaying parliamentary resources, giving access to debates as well as to multimedia galleries. AI-based transcription technology simplifies documentation and facilitates information retrieval, contributing to greater efficiency in parliamentary operations. The app also acts as a bridge between the public and their representatives, facilitating open dialogue through the Constituency Connect function.

In Singapore, Pair has been implemented as a secure platform that allows the potential of generative AI to be exploited without compromising the security of confidential data. The system operates as a chatbot, customised for offices, ensuring reliable and relevant responses to be improved using official documentation.

Relations with the public

The Brazilian Chamber of Deputies, for instance, uses the intelligent analysis platform Ulysses, an artificial intelligence-based tool that uses machine-learning to examine large volumes of documents and data.

In particular, the system has the capacity to classify new documents and label them more efficiently on the public web portal of the Brazilian Chamber, enabling better consultation by citizens.

Since 2018, the public have had the opportunity to vote and comment (anonymously) on specific bills. All the data collected are then screened and used by Ulysses. Managing the comments received, which can amount to up to 30,000 for a single bill, constitutes a challenge for the Members of Parliament. Ulysses addresses this problem by applying a machine-learning algorithm to the comments, based on natural language processing. The system performs an analysis of all the comments received, focusing on the positive and negative aspects of a legislative proposal.

Improved quality and accuracy of both written and video reports

The Estonian Parliament uses HANS, an artificial intelligence-based system using speech recognition designed to optimise the efficiency and accuracy of transcribing parliamentary sessions.

The system was designed with the ability to integrate synergistically with all existing tools. This ensures the smooth exchange of information with the document management system, the reception of data from the electronic plenary voting system and the transmission of information to the online platform.

In Japan, the House of Representatives uses the Automatic Speech Recognition (ASR) system, which directly transcribes parliamentary speeches made in both plenary sessions and at committee meetings. The performance of ASR achieves a very high degree of accuracy, in excess of 90 per cent. Using ASR, an Internet video retrieval system has been developed to create timing data matching to the transcribed reports of parliamentary meetings and live videos. This technology has enabled the development of an integrated voice recognition and audio-visual information analysis system based on a special interface permitting the automatic selection of highlights of parliamentary debates.

The Dutch House of Representatives has implemented the artificial intelligence-based system called Speech2Write, an institutional solution for converting speech into text and verbally transliterating information into written reports. This system, used during parliamentary sessions, uses automatic speech recognition technologies and automated editing functionalities, which remove superfluous words, make grammatical corrections and propose editing suggestions.

The Digital Sansad app is an advanced parliamentary session broadcasting tool used by the Indian Parliament that, by exploiting AI, is capable of transcribing discussions in real time. This technology provides automatic speech recognition, giving accurate recordings without the need for human involvement.

The previously mentioned Ulysses system used in Brazil also provides the possibility of indexing live broadcasts and recorded videos to identify speakers, while simultaneously transcribing their speeches.

Several AI-based technologies have also been implemented in Bahrain, including voice transcription for parliamentary reports, real-time subtitling of streamed online videos and a chatbot for searching documents.

PART IV

Principles for using AI to support parliamentary business

Principles for using AI to support parliamentary business

Foreword

Legislative Assemblies have specific characteristics and are governed by rules and principles that distinguish them in several respects not only from private sector entities but also from other public authorities.

As evidenced in the previous sections of this report, there are several areas in which Artificial Intelligence, and not only Generative AI, could be very beneficial for work in parliaments (in terms of work efficiency, better quality of regulation and transparency in dealing with the public).

However, given the constitutional and democratic importance of parliamentary work, the risks associated with the use of these systems must be acknowledged, managed and where possible mitigated. And so, as this fact-finding investigation is concluded, a number of principles may be drawn up, which we believe should be respected by every initiatives regarding the implementation of AI in parliamentary business. Compliance with these principles – together with compliance with national and European regulations – guarantees the transparency, regularity, independence and reliability of parliamentary work, as well as citizens' rights and, consequently, the sound functioning of our democratic institutions.

The following principles, while in no way having any claim to being exhaustive, constitute proposals open to discussion, with a view to adding future elements and updates in order to combine technological process with the fundamental values which underpin our democracy.

Transparency: The use of Artificial Intelligence systems must always be transparent. Decisions and processes must be explainable, public, and comprehensible, permitting democratic control. Consequently, Parliament must be given all information and rights required to be able to explain the functioning of the AI systems in use. Artificial intelligence products must always be clearly recognisable as such, and clearly distinguishable.

Information integrity: The quality of information, data and documents used in the training of AI systems is crucial. Similarly, it is essential to ensure that the content generated by AI is reliable in order to prevent errors or hallucinations and guarantee correct information.

Human accountability: Human accountability and control must always be guaranteed. Whoever takes the decision about which AI systems are to be employed, and whoever uses them must be able to give account of their decisions, ensuring that the implementation of AI is conducted in accordance with existing laws, respecting the prerogatives of parliament and the rights and freedoms of individuals.

Training, skills and awareness: It is of paramount importance to provide the necessary training in the use of AI and to possess adequate up-to-date legal and technological expertise. Additionally, the necessary steps must be taken to ensure awareness of the limitations, the potential and the proper use of AI.

Public participation: the widest possible contribution of all the stakeholders must always be ensured when taking decisions concerning the use of AI systems to support parliamentary work. While guaranteeing mutual respect for everyone's roles, the public debate must always be ensured, particularly with researchers and with operators in this sector, in order to acquire the information and other elements needed to fully deal with the complexities and critical aspects of AI.

Security and robustness: The systems used must be secure and robust, protecting the integrity and availability of Parliament's data and documentation, and be able to function properly even under unforeseen conditions.

The public benefit (public interest): The use of AI systems must always aim at being a benefit to the public, respecting constitutional principles and rules regarding fundamental rights and freedoms and fostering environmental sustainability..

Preventing interference: It is necessary to prevent any form of undue interference through AI, ensuring that its use is impartial and non-manipulative, always guaranteeing the independence and the prerogatives of the Parliament.

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