Rethinking Democracy in the "Pandemic Society" A journey in search of the governance with, of and by AI

Gianluca Misuraca[1*[0000-0002-5406-9447]]

[1] Danube University, 3500, Krems, Austria
gm@donau-uni.ac.at

Abstract. The COVID-19 outbreak had a swift and severe impact on our lives, and a subtle transformation is affecting Democracy as we are used to knowing it. In this paper I argue that the "Pandemic Society" we are now experiencing magnifies a dilemma already evident in the recent evolution of digital government and governance: securing citizens' privacy or delivering better services – now including the protection of personal health. In this scenario, while human interactions are being permanently modified by the mediation of technologies, and in particular the accelerated adoption of Artificial Intelligence, a fundamental question to be addressed is how to ensure digital resilience and collective well-being while safeguarding liberal democracy and individual rights. Finding an answer to this challenge requires innovating the democratic settings and functioning of global governance arrangements in the digital age. Yet too little is known about the chances and the conditions for AI to become supportive of the needed quantity and quality of democratic innovation in the forthcoming decades. I thus elaborate on the quest for redesigning institutional frameworks to rethink and innovate our democratic systems and instruments for deliberation, where the AI phenomenon - under wide scrutiny now also at policy and public service levels – becomes crucial. I conclude suggesting directions for further research and new avenues for policy design and governance in the age of digital transformation.

Keywords: Artificial Intelligence, Governance, Democratic Innovation, Europe; Foresight; Digital Resilience; Policy Design; Pandemic Society

1 Democratic innovation and Digital Resilience

In recent decades, reflecting on major challenges to representative institutions has let emerge a breeding ground for a more informed look into the future of democratic governance [1]. In response to some of these challenges, democratic innovations have been proposed as a remedy for reviving outdated representative systems as well as for increasing social and political trust, especially in the opinion-building and deliberative stages of democratic life.

The umbrella term "democratic innovations" encompasses a range of new mechanisms aimed at expanding citizens' participation in political decision-making [2; 3]. These traditionally include town hall meetings, citizens' assemblies, deliberative polls, participatory budgeting, crowdsourcing, online petitioning, consultations and forums.

Although they are often more government-driven rather than citizen-initiated, they aim to involve interactions with citizens at the same time as they provide input to institutional processes [4]. Most of them particularly exploit the combination of social media and mobile technologies, which emerged prominently in the last twenty years as a new computing paradigm [5]. And while they all have advantages they also convey risks that have to be anticipated and monitored, to avoid falling into a sort of "digital idealism" on one side, or on the contrary, let emerge a possible danger of "neo-luddism".

However, with the outbreak of the COVID-19 pandemic many of us are facing new challenges that may have a broader influence on the future of humanity. Some of their implications are already - and maybe too early - labelled "the new normal" for our democratic systems. Democracy as we know it, is at risk of being overcome by a long-lasting and enduring status of "*anxiety, panic and dread, where faith and confidence clash and collide in a dynamic and uncertain social milieu*", [6] where human interactions are permanently modified by periodically prevailing sanitary pressure and the palliative or track and trace capacities brought up by digital technologies [7].

In this scenario, not only global value chains, logistics and transport networks, office and factory work, but also individual freedoms are deeply restructured and even human rights may be "traded" with collective needs. The spread of tracing and tracking technologies facilitated by real-time or ex post surveillance of citizens and communities as a result of AI, Internet of Things (IoT), and other "new" technological paradigms, is already starting to create tensions between the defenders of civil liberties and the new "Digital Leviathan" State in continuous emergency to anticipate new possible risks.

Within this context, the key question becomes *how to ensure digital resilience and collective well-being while safeguarding liberal democracy and individual rights?*

In this respect it is worth nothing that the term resilience has emerged as a popular construct in several disciplines, and it can be defined as "*the ability to face shocks and persistent structural changes in such a way that societal well-being is preserved, without compromising the heritage for future generations*" [8].

Here, however, I refer to the concept of digital resilience, borrowing the concept from the field of cyber-security and expanding it. In a constantly evolving digital environment, in fact, "*organizations must be able to move quickly and seamlessly to adopt new digital technology solutions and then to recover, rebound and move forward if things go wrong*" [9].

We are embedded in an increasingly digital world, but many organizations – both public and private - are still unaware of the extent to which they rely on digital technology and the risks that come with it.

The fallout of the COVID-19 crisis is showing - more than ever - the importance of digital technologies to maintain a path of transformation compatible with sustainability and shared prosperity. This is in line with the ambitious goals set out by the new Digital Strategy for Europe [10], well before the COVID-19 crisis, which emphasized the need to rethink our model of production and social welfare, in order to better preserve them for future generations. As we head towards a digitally dependent future, the need for digital resilience has never been greater to ensure that our society evolves in a sustainable manner.

In the new global "Pandemic Society" that is emerging after the crisis, the EU cannot fail again on the promise of ensuring "A New Start for Europe" [11] and must revitalize the trust relationship with citizens. This asks for new channels of expression, reflection and opinion building, requiring a strong incitation towards innovating the democratic settings and functioning of EU institutions and Member States.

Against this background, in this paper I present and discuss the main elements and outcomes of a dedicated foresight exercise at the horizon 2040 [12] involving alternative scenarios for digital transformation of governance in Europe. Then I elaborate upon different hypotheses underlying the political choices that our institutions are challenged with in order to shape our future digital society, with a specific regard to the topic of the "governance with, of and by" AI. These reflections will serve to highlight the need for redesigning our institutional frameworks, to rethink and innovate our democratic systems and instruments for enhancing collective reflection and deliberation. I conclude by outlining directions for research and new avenues for policy design in the emerging "Pandemic Society".

2 European Digital sovereignty and global AI governance: two sides of the same coin?

As a result of the ongoing pandemic, the massive cultural shift to online learning and distance working, coupled with the increase of eCommerce and multimedia offerings for home entertainment, with related threats and further innovation required in shopping, logistics and service fruition, are expected to give advent to new mechanisms of social connection, guaranteeing social distancing and health prevention through effective prediction of risks and monitoring of citizens behaviours.

This will imply the need to rethink how services are designed and delivered, the way data is shared and managed, and the manner algorithmic decision-making is implemented, putting at odds the very principles of privacy, data protection and human rights and their trade-off with health security, economic productivity and social cohesion.

As a matter of fact, the rush to understand the new socio-economic contexts created by the wide adoption of AI is justified by its far-ranging consequences, spanning across almost every walk of life - from labour markets [13], through human rights protection [14] to healthcare [15]. Yet, governments and policy-makers are faced by a difficult dilemma: the obligation to protect citizens from potential algorithmic harms is at odds with the temptation to increase the efficiency and enhance the quality of digital services delivery. In other words – they are confronted with the challenge to govern algorithms and related automated processes (governance of AI), while governing with algorithms and associated computerized methods and systems (governance with and by AI).

Whether such multiple role is even possible has been a matter of long lasting debate, further accelerated by the evolving dynamics influenced by the rapid introduction and use of AI systems and tools in most public and private sectors' activities, with a push to adopt AI as it is good for society, despite the possible risks and threats it entails.

The true ambiguity here lies in the fact that governing "by AI" would imply that human decision-makers should surrender to algorithms' "superhuman capacities",

while, governing "with AI" means that humans should remain in the classical situation of using and controlling technologies that reinforce our capacity, through a process that requires human supervision. For this reason, what type of governance "of AI" is adopted, becomes crucial and not so straightforward to determine upfront.

In this respect, the key challenge stems from the algorithms' intrinsic properties, which make them distinct from other ICT solutions, long embraced by governments and private sector organizations: vast computing power, incompatible with human cognitive capabilities; "learning" capacities, or autonomous knowledge creation happening without proper supervision; profiling abilities, of categorizing traits and behaviours; and a nudging – compliance incentivizing – attitude: all these elements create externalities that rule-based programming lacks [16], especially when it comes to more sophisticated deep-learning approaches.

It is thus crucial to understand how to use and govern algorithms, data and global digital infrastructures in a pandemic world – that seems to be here to stay – while safeguarding our collective social and economic prosperity and guarantee individual rights and democratic values. Two broad considerations that cut across the debate on digital transformation emerge here as fundamental. The first regards the concept of digital sovereignty that has been advanced strongly by the EU [17]. The other concerns the contrast between a precautionary and a cost-benefit approach to AI regulation and how we are in a position today of appraising the long-term consequences of the arbitration that will impact our society tomorrow.

This unsettled situation with respect to the control of data has led a number of European policy circles to reflect on digital strategic autonomy and sovereignty [17; 18; 19]. As noted in a recent parliamentary brief [20], this concept builds on the concern that, while Europe is at the forefront in terms of research and on a par with its global competitors, it nonetheless lags behind the US and China when it comes to private investment and major commercial applications. To address this concern, the new European data strategy [21] proposes the construction of a common data framework that would favour and support sharing of data across-EU.

From a foresight perspective, one may wonder to what extent this is a tactical or a strategic move. In this sense, a key argument is that any attempt to regulate the current digital transformation would stifle innovation. The opposing view is that in the face of uncertainty, a strong regulatory approach could be applied, based on the precautionary principle [22]. Although reasonable *a priori*, the precautionary approach is usually contested on the ground that, if regulation is supported by the principle of the worst scenario, then a lack of regulation can be defended by the same argument when the consequences of strict regulations are potentially very negative. Precautionary regulation runs the risk of becoming the source for a "law of fear" approach [23].

In this regard, a recent analysis by Floridi [24] opens further questions to the debate. While it is acknowledged that the first two decades of this century have seen a sort of *de facto digital corporate sovereignty*, and – in his view - the EU General Data Protection Regulation (GDPR) seems paving the way for a *European digital data sovereignty*, the jury is still out with respect to AI and 5G governance, where he in fact advocates for the establishment of a - *de jure* and not only *de facto* - supranational digital sovereignty mechanism at the EU level.

In his own words, Floridi sees the resurgence of a sort of mediaeval battle, similar to the "Investiture Controversy", reminding us that *"whoever will win the fight for digital sovereignty will determine the lives of all people on both sides of the digital divide, exactly like the Investiture Controversy affected all people, no matter whether religious or not"* [24].

It is clear, in fact, that the issues of strategic autonomy and technological sovereignty involve a deep reflection on the whole value chain of how the data economy operates and its geo-political underpinnings.

In practice, despite the rhetoric that may often surround the concept of European Digital leadership, with implications on data protection, global competition and cybersecurity in face of big tech platforms dominance, 5G deployment rules and the danger of exporting data and importing services, the key question revolves around the need to build a systematic development of alternatives, with a citizen-centered narrative on how each click, at the end, matters, through regulatory and policy innovations that safeguard European values and democratic principles.

3 Back to the future: Envisioning the digital transformation of governance in 2040

In light of what discussed above, the famous saying by Niccolò Machiavelli may well apply to the challenges European policy makers are confronted with today as: "…*there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new*" [25].

Within this context, it is thus instrumental taking a look at how digital transformation of governance could evolve in light of the current debate and possible regulatory interventions, with a specific focus on the role of the EU. To support us in this exercise, I consider the foresight scenarios for Digital transformation of governance at the horizon 2040 elaborated as part of the prospective component of the JRC research on Exploring Digital Government Transformation in the EU – Understanding public sector innovation in a data-driven society (in short DigiGov) [12].

The proposed scenarios were defined on the basis of two main dimensions of impact: a) the digital transformation landscape, ranging from "regulated" to "unregulated"; and b) digital citizenry, ranging from "active" to "passive".

The dimension of the digital transformation landscape shows the extent to which government is "steering" the process, rather than leaving to the market the responsibility for dealing with the ethical, societal and economic consequences of adopting technologies. The digital citizenry axis measures the extent to which individuals are actively in charge of their digital lives, especially with regard to their rights as data subjects.

The scenarios presented are set to help find appropriate policy steps towards a more effective and efficient European digital future within an evolving global context, and to contribute advancing the policy debate on the governance "with, of and by AI" and its impact on society. See **Fig. 1**.

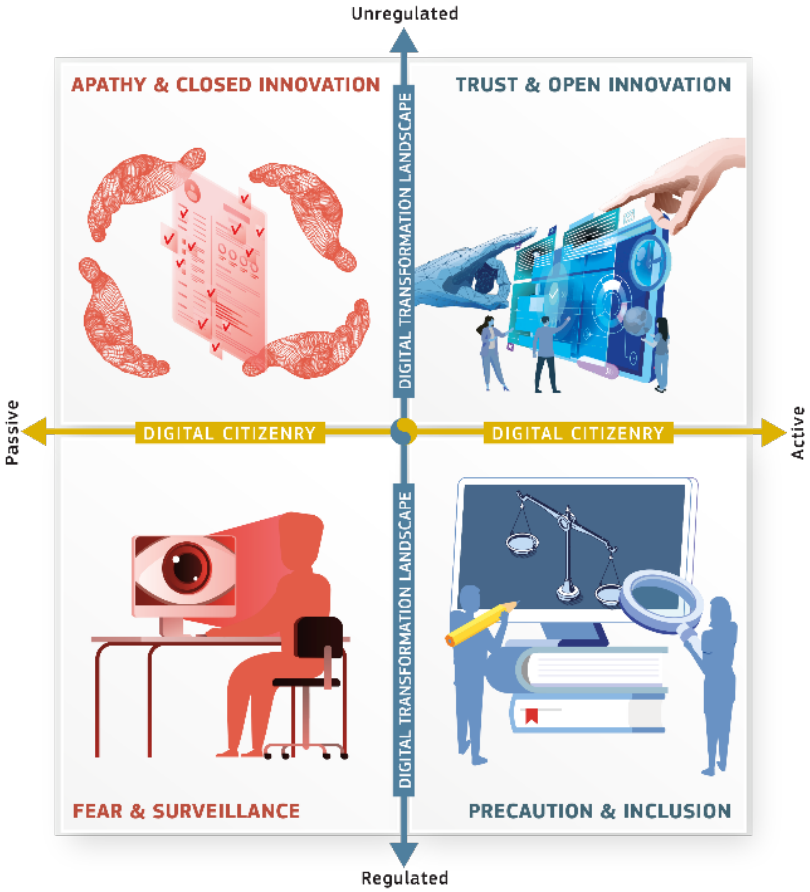

Fig. 1. Scenarios for Digital transformation of governance 2040 [12]

While I do not discuss here the scenarios in detail, it is worth noticing that, as it is well known to futurists, "*A Scenario is a possible world… a world that does not have to be, but may yet come to pass...*" [26]. This means that the future will most probably be characterized by a mix, combining elements from each scenario, the kind of mixture depending on policy decisions that will be taken today, reflecting the current cultural and governance value systems.

In this regard, it is likely that neither "leave it to the market" nor "make it a public utility" can adequately represent the full gamut of values, economic interests and state priorities of the EU and its Member States. Digital infrastructures, if totally unregulated, will not automatically ensure distributed innovation and equitable economic opportunity and growth. In the same way, interventionist regulation would not necessarily produce the desired outcomes and might also delay innovation if not well calibrated and implemented in a specific way to promote investments and social impact [12].

In view of the fact that both interventionism and *laissez-faire* approaches may appear inadequate - which to some extent mirrors the juxtaposition between a precautionary view and a cost-benefit attitude - it is more realistic to expect that government players acting at the same time as users as well as infrastructure and service providers and regulatory innovators, can solve the dilemma between innovation and regulation, in collaboration with the "makers" themselves. This of course requires that appropriate incentives and regulatory mechanisms are set-up, taking into account all the biases potentially involved in the dynamics tensions between different institutional and commercial interests. If successful, however, this would allow defining the governance framework needed to spur innovation and build trust in Digital Europe in 2040 [12].

4 Digital Governance innovation and institutional re-design in the "Pandemic Society"

Against the backdrop of this debate, I argue that digital technologies can further amplify the cross-boundary dimension of political engagement and, as far as it concerns the European Union at least, it is the role of the European Commission, as "guardian of the Treaties", to guarantee the respect of freedoms and human rights for all citizens and make sure that nation-States will follow the EU's values and improve the well-being of citizens. This is pivotal in a "Pandemic Society" that is further shifting to social media and digital technologies the role of uniting citizens and the capacity to gather data, sentiments and nudge decisions, often through malicious use and manipulation of information [27].

The ability of people to organise and deliberate digitally is becoming a direct evolution of the democratic process and must be understood at an institutional (global) level as it may forge new forms of democratic participation and policy-making, not necessarily linked to traditional models of representative democracy or "context-based" politics. In this perspective, the European Union may be uniquely positioned to contribute shaping a common approach at global level in this crucial area, asserting the EU's identity on the international scene and protecting the rights and interests of its citizens, while pursuing the effectiveness of the implementation and the future evolution of the *acquis communautaire* within Europe, and influencing global standard-settings [28], in line with the Commission's priorities for "A new push for European democracy" and "A Europe fit for the Digital Age" [29]. Nevertheless, a dilemma naturally emerges between securing citizens' privacy and maximizing the efficiency of service delivery. As a rule of thumb, it should be borne in mind that citizens tend to be more likely to accept the necessity of data sharing, if there is a public benefit (however defined) clearly perceived (and some level of perceptible control by trustable expert sources). However, there is ample evidence that users find it difficult to turn their privacy preferences into meaningful decisions, sacrificing long-term privacy for immediate gains [30].

Furthermore, citizens' perception towards data sharing is only one of the issues to consider in relation to AI governance of course, and it must be avoided that AI is considered as a sort of "super-agent", involved in everything capable to do more or less

everything. Relying on automated methods follows an all too familiar pattern: stakeholders initially consider decision making aids trustworthy, then after observing that errors happen they distrust even the most reliable applications. In brief, a too early adoption of faulty applications puts the trust in the system at risk. Similarly, reliance on voluntary best practices and self-regulation fares well, as long as no misdemeanour is found on the side of data processors - as exemplified by the public outrage and calls for regulation of Internet platforms that have ignored self-imposed standards, even after the introduction of the GDPR which has forced companies processing data to conform and introduce new handling and security practices [31].

The development of AI is in fact driven by the "*combination of enormous amounts of data with powerful computation and sophisticated mathematical models, that in turn allows the development of complex algorithms which are capable to simulate human intelligence such as problem solving and learning"* [32]. However, it is impossible to talk about an emerging shared global AI landscape, without looking at existing data governance regimes and practices [33]. In fact, existing data protection and AI governance landscapes seemingly have a lot in common. Landmark achievements in the field of data protection – such as the GDPR – would not be possible without years and years of negotiation, established fora, robust civil society advocacy, infrastructure and enforcement mechanisms. It would be only logical for AI governance – that is rule-making around algorithms that process data – to be established in accord, and as an extension of the legacy and infrastructure of data protection and competition regulation [16].

To the contrary, what seems to be happening, is an effort driven by the narrative of exceptionalism, whereby AI (however defined) is a phenomenon that is immune to existing governance structures, policies and laws. A gold rush to become a rule-maker in the field of AI governance has seen governments, international organisations, and corporations publish many (often similar) frameworks, strategies, and guidelines. These documents reflect a search for effective global coordination and rule-based order, yet – for the most part – omit or override existing governance mechanisms and institutions, as if they were completely mismatched for "the age of AI" [33].

With the current turn of attention towards AI governance, especially in the EU [34; 35], there have been recurrent warnings against the creation of such regulatory silos that would favour technocratic frameworks over a comprehensive view of the effects of data on the economy and society. Many of these warnings could be applicable to the current setup of AI governance in fact. It is therefore important to assess existing and emerging regulatory scenarios and tools that will gain traction in the future [36]. Existing portfolios of regulatory measures include, but are not limited to: national strategies, antitrust and consumer protection measures, ethical guidelines, impact assessments, data protection enforcement, bans and standards and Intellectual Property rules.

Further, it would make an enormous difference to think of AI governance as an extension of data protection and competition regulations, acting hand in hand to reduce harms and secure human dignity. Such effort – instead of happening in a vacuum – would help update major existing regulations (not only the GDPR but also the Machinery Directive and the EU Legislation on liability for instance) to make they work where they do not: by addressing massive imbalances in power, advancing data portability and

privacy by design or securing EU wide, public digital infrastructure and related underpinning digital content and commercial rules for its exploitation and protection [16].

To address such complex challenges, there is an urgent need to innovate our institutional designs and strengthen the resilience of our social and economic systems. This calls for better understanding the intertwined relations and policy implications of emerging paradigms of governance "with and of" digital technologies, which are transforming the way public and private sector organisations operate and can enhance how services are delivered and policies are shaped, implemented and evaluated [37].

At the same time, as the pressures to deploy automated decision making systems in both the private and the public sector intensify, it is crucial to examine how machine learning and bureaucracy have both "*become generalizable modes of rational ordering based on abstraction and deriving authority from claims to neutrality and objectivity*" [38]. To this end, as we have anticipated above, the new emerging phenomenon of "Algorithmic governance", or "governance by AI", must be discerned and evaluated in its full dimension, analysing the enormous potential for make decisions more effective and of high objective quality – if implemented without biases – but also the high risks it could generate, especially in sensitive policy areas with strong impact on human behaviour, with implications for the underlying conditions and principles of our democratic systems.

This requires a deeper investigation of how data and digital infrastructures are developed and governed at global level, the rules underpinning and guiding algorithmic decision making, and in what manner citizens' engagement is structured and channelled to generate collective wisdom and new forms of social innovation in the current "technology-diplomacy" arena, expected to harness AI to increase wellbeing for all [39].

5 Conclusions: towards a policy-research agenda for Governance with/of and by AI

In "Machiavelli and the Politics of Democratic Innovation" [40], Holman highlights that the project of the Florentine philosopher was "*to think a system of institutions capable, through harnessing the creative energy of the people who constitute the society …. to provide a means for the actualization of that human desire that is detailed in The Prince. It is in this sense that the Republic is the regime in which all the people can, by means of their virtue, become Princes*".

In a similar vein, we can imagine a post-COVID-19 "Pandemic Democracy" where digital technologies really empower the citizens, crafting new ways of engaging them in politics and decision making. But as this new pandemic world will evolve how digital technologies will mediate our actions and facilitate (or even automate) deliberations is by no means known or secured already. Therefore, EU level policymaking must be able to keep the pace of technological innovation, and play a prominent role in the strive to redefining global governance.

In this connection, as pointed out by Walker [41], the growing "convergence" between superpowers like the US, Russia and China led the National Endowment for Democracy to coin the term "sharp power", meaning the use of the digital information

arena to implement a sort of new authoritarian policies - and even battles, mostly based on online disinformation [28]. Digital wars have been the "new normal" for several years now, but the "new normal" of pandemic societies may put individual rights and democratic values at risk.

Some scholars [42] also argue that democratic innovation in the future will be markedly different from the old theoretical concepts of participatory democracy. This calls for better understanding how institutions and governments can integrate digital technologies and data science approaches into public discourse, in an effort to let the voices of the people be heard, regardless of socio-economic status, party affiliation, or party(ies) in power.

The COVID-19 pandemic crisis has highlighted even more the need for governments and EU institutions to engage with citizens and civil society, to build trust and rely on the wealth of information and knowledge that bottom-up processes can generate, tapping on the use of digital infrastructures, tools and applications [43]. The post-lockdown phase of the pandemic may last for long and transform our way of living. The EU and its Member States will have to adopt decisions that may not succeed unless shared with all stakeholders. As the Future of Europe conference is expected to focus on empowering citizens, the use of digital tools to co-create the future with civil society is a true imperative [44]. The capacity of the EU to shape policies that reconcile its interests with the priorities of Member States, while speaking to its citizens, will prove crucial to revitalize the EU project – and the European dream.

In this perspective, future research should aim at studying the impact of innovative mechanisms for engaging citizens in democratic processes moving away from traditional policy tools, to embrace data-driven policy-making, foresight, experimental and AI-assisted decision systems and dynamic simulation models, as ways to increase the speed and effectiveness of policies and their social acceptance and adoption [28]. This would require combining a mix of interdisciplinary methods, venturing into several new domains, paving the way for the implementation of AI-assisted and other innovative approaches of policy design, engaging policy-makers, relevant stakeholders and citizens panels in foresight and systems thinking sessions for scenarios design, conduct behavioural experiments and explore new methods for exploiting data-driven policy modelling, so to lay the foundations for using data science in the analysis of democratic innovations and new models of policy-making [45]. In doing this, however, we must make sure to maintain ourselves reflexive regarding AI, as it suggests some new levels of complexity to get accustomed and being able to cope with.

Therefore, from a methodological perspective, when coping with complex, but also possibly disruptive and open-ended social dynamics, and in line with the foresight tradition of making anticipatory systems more robust [46], it is essential to take into consideration the concept of 'reframing' public sector innovation, which refers to "*the need to consider both tangible changes in procedures, functions and institutions, as well as a 'cognitive restructuring' that concerns values, culture and shared understandings to articulate a reinforced set of values for the public sector ethos*" [12].

In other words, we need to take into account the fact that AI-based technologies provide the government with powerful tools and capacity for 'nudging' citizens to behave in one way or another, and this must be considered carefully from both a research and a policy perspective.

In doing so, key enabling factors and alternative regulatory governance regimes should be explored through piloting data driven digital solutions in 'Smart City' environments, analysing results of specific Hackathons and large scale computational experiments based on big-data-driven nudging techniques. These, also defined as "hypernudge" [47], require that particular attention is given to collect, filter, curate and intelligently tap bottom-up data, available from multiple sources, and incorporate them in dynamic social simulation models to allow real-time informed decision-making. This requires highlighting algorithmically determined correlations between data items and within data sets that would not otherwise be observable through human cognition alone, or even with standard computing and modelling techniques. At the same time, appropriate consideration must be given to the possibility to generate local content to guarantee different cultural backgrounds and diverse perspectives are taken into account.

The overall goal of such approach would thus be to assess both the positive and negative consequences of different data-driven and algorithmic governance models on collective behaviour and the interaction among individuals and groups, especially in the "new normality" we may be living in, in the hoped to be a post-COVID-19 world, which instead seems being permanently prolonged as a form of "Pandemic Society".

It must be considered in fact that, even if social trust, political trust, and satisfaction with democracy are mutually dependent, the cause-and-effect relations between them are not perfectly symmetrical, and the links are sometimes loose and contingent, especially in times of crisis and political turmoil.

By doing so, lights could be shed on how a different way to approach policymaking at the EU and National level, centred on democratic innovation and digital resilience can offer important advantages to policy-makers, while ensuring liberal EU values are respected and further promoted globally. This research may thus have an influence on global cooperation, supporting the ambitious goal of the von der Leyen Commission of having a "geopolitical" nature, committed to sustainable policies and to act as "the guardian of multilateralism" [28], which is becoming evident in key policy areas such as the current effort to establish an International Alliance for human-centric AI, promoting a value-driven approach on the impact of the digital transformation, having an impact on how our society is governed today, and more so on how this will shape the world in which our children, and the children of our children, will live in the future.

Acknowledgments

This paper builds in part on research led by the author when he was Senior Scientist responsible for research on Digital transformation of governance and AI for the Public Sector at the European Commission's Joint Research Centre in Seville, being also involved in other projects as a member of the Scientific Committee or Advisory Board. However, the opinions expressed here may not be regarded as stating the official position of the European Commission. A special thanks for the joint work conducted goes to Cristiano Codagnone, Egidijus Barcevicius and Maciej Kuziemski as well as Francesco Molinari and Pierre Rossel for their comments on an early draft of the text.

References

1. Dalton, R.J. (2004). Democratic Challenges, Democratic Choices: The Erosion of Political Support in Advanced Industrial Democracies. Oxford: Oxford University Press.
2. Newton, K., Geissel, B., (Eds.) (2012). Evaluating Democratic Innovations: Curing the Democratic Malaise? London: Routledge. https://doi.org/10.4324/9780203155196
3. Smith, G. (2009). Democratic Innovations: Designing Institutions for Citizen Participation. Cambridge: Cambridge University Press.
4. Karlsson, M., Åström, J., Adenskog, M., (2020), Democratic Innovation in Times of Crisis: Exploring Changes in Social and Political Trust, in Policy & Internet.
5. Boulianne, S. (2018). Twenty Years of Digital Media Effects on Civic and Political Participation, in Communication Research, Vol. 47(7) 947–966
6. Degerman, D., Flinders, M., Johnson, M., T., (2020): In defence of fear: COVID-19, crises and democracy, Critical Review of International Social and Political Philosophy.
7. Kitchin, R., (2020): Civil liberties or public health, or civil liberties and public health? Using surveillance technologies to tackle the spread of COVID-19, Space and Polity.
8. Giovannini E, Benczur, P., Campolongo, E, Cariboni J., Manca, AR. (2020). Time for transformative resilience: the COVID19 emergency, EUR 30179 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-18113-2 doi:10.2760/062495.
9. University College London, (2018). Understanding the challenges of resilience in digital environments, available at https://shearwatergroup.com/digital-resilience-whitepaper/
10. European Commission. (2020a). Shaping Europe's digital future. COM (2020) 67 final, Brussels: European Commission.
11. Juncker, J. C., (2014). A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change, Political Guidelines for the next European Commission 2014-2019
12. Misuraca, G., Barcevičius, E. & Codagnone, C. (Eds.), (2020). Exploring Digital Government Transformation in the EU – Understanding public sector innovation in a data-driven society, EUR 30333 EN, Publications Office of the European Union, Luxembourg.
13. Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? Technological Forecasting and Social Change, 114, 254–280.
14. Eubanks, V. (2018). Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor, St. Martin's Press.
15. Jiang, F., Jiang, Y., Zhi, H., Dong, Y., Li, H., Ma, S., Wang, Y., Dong, Q., Shen, H., & Wang, Y. (2017). AI in healthcare: Past, present and future. Stroke and Vascular Neurology, 2(4).
16. Kuziemski, M., Misuraca, G., (2020). AI Governance in the Public Sector: Three Tales from the Frontiers of Automated Decision-making in Democratic Settings, Telecommunications Policy, Vol. 44, Issue 6, July 2020, doi.org/10.1016/j.telpol.2020.101976
17. European Political Strategy Centre. (2019). Rethinking Strategic Autonomy in the Digital Age. Brussels: EPSC Strategic Notes, Issue 30, European Commission, Brussels.
18. Timmers, P. (2019). Ethics of AI and Cybersecurity When Sovereignty is at Stake. Minds and Machines. doi:10.1007/s11023-019-09508-4
19. Klossa, G., Boen, D., Knapp, D, Sten-Kristian, S., Schoenauer, M. and Manoury, C. (2019). Towards European Media Sovereignty. An Industrial Media Strategy to leverage Data, Algorithms and Artificial Intelligence
20. European Parliament. (2020). Digital Sovereignty for Europe. European Parliament, Brussels.
21. European Commission. (2020b). A European Strategy for Data. COM (2020) 66 final, Brussels: European Commission.
22. Cohen, J. (2019). Between Truth and Power: The Legal Constructions of Informational Capitalism. Oxford: Oxford University Press.
23. Sunstein, C. (2005). The Law of Fear. Cambridge: Cambridge University Press. Sunstein, C. (2019). The Cost-Benefit Revolution. Cambridge (Mass): MIT Press.

24. Floridi, L. (2020). The Fight for Digital Sovereignty: What It Is, and Why It Matters, Especially for the EU. Philos. Technol. 33, 369–378, doi.org/10.1007/s13347-020-00423-6
25. Machiavelli, Niccolò. (1513/1532- 2015). The Prince with Related Documents, Bedford St. Martins. 2d rev. ed. Translated and edited by William J. Connell.
26. Rosa, A. B. (2015). Distributed futures: Mixed-reality systems at the nexus of governance, experience and preferred futures. Dissertation. Ann Arbor: ProQuest.
27. Skaug Sætra, H., (2019). When nudge comes to shove: Liberty and nudging in the era of big data, Technology in Society, Vol. 59, 101130, https://doi.org/10.1016/j.techsoc.2019.04.006
28. Renda, A., (2020). Making sense of the "Geopolitical Commission" (Policy Brief), Deliverable D10.8 of the TRIGGER project, available at: https://trigger-project.eu/resources
29. von der Leyen, U. (2019). A Union that strives for more - My agenda for Europe, Political Guidelines for the next European Commission 2019-2024.
30. Coll, L. (2015). Personal data empowerment: Time for a fairer data deal? https://www.citizensadvice.org.uk/Global/Public/Corporate content/Publications
31. Veale, M., Brass, I. (2019). Administration by algorithm? Public management meets public sector machine learning. In Y. Karen, & L. Martin (Eds.), Algorithmic regulation. Oxford University Press.
32. Gruson D, Helleputte T, Rousseau P, Gruson D. (2019). Data science, artificial intelligence, and machine learning: Opportunities for laboratory medicine and the value of positive regulation. Clinical Biochemistry. 69:1-7. doi: 10.1016/j.clinbiochem.2019.04.013.
33. Misuraca, G., and van Noordt, C., (2020). AI Watch - Artificial Intelligence in public services: Overview of the use and impact of AI in public services in the EU, EUR 30255 EN, Publications Office of the European Union, Luxembourg, doi:10.2760/039619
34. European Commission. (2018). Artificial Intelligence for Europe. COM (2018) 237 final, Brussels: European Commission
35. European Commission. (2020c). White Paper on Artificial Intelligence. A European Approach to Excellence and Trust. COM (2020) 65 final, Brussels: European Commission.
36. Collins, A., Florin, M. V., Rusu, A., Saxena, A., Viscusi, G., (2020). Review of current governance regimes and EU initiatives concerning AI (Working Paper) Deliverable 4.3 of the TRIGGER Project, available at https://trigger-project.eu/deliverables
37. Misuraca, G. (2012). Assessing ICT-enabled Innovation for Governance and Policy Making. https://doi.org/10.5075/epfl-thesis-5497
38. McQuillan, D., (2018). The Manifesto on Algorithmic Humanitarianism, Symposium on 'Reimagining Digital Humanitarianism', Goldsmiths, University of London, Feb 16th 2018.
39. Feijóo, C., Kwon, Y., Bauer, J., M., Bohlin, E., Howell, B., Jain, R., Potgieter, P., Vu, K., Whalley, J., Xia, J., (2020). Harnessing Artificial Intelligence to increase wellbeing for all: The case for a new technology diplomacy, Telecommunications Policy, Vol. 44, Issue 6.
40. Holman, C., (2018), Machiavelli and the Politics of Democratic Innovation, University of Toronto Press.
41. Walker, C.. (2018), What Is 'Sharp Power'? Journal of Democracy 29, no. 3: 9–23.
42. Saward, M. (Ed). (2000). Democratic innovation: Deliberation, representation and association, ECPR Studies in European Political Science. London and New York: Routledge.
43. Renda, A., Castro, R. (2020). Towards Stronger EU Governance of Health Threats after the COVID-19 Pandemic. European Journal of Risk Regulation, 11(2), doi:10.1017/err.2020.34
44. Council of the European Union, (2020), Position on the Conference on the Future of Europe, Brussels, 24 June 2020, (OR. en), 9102/20, AG 32, INST 120
45. Misuraca, G., (2018), Data-rich Scenarios for the Future, in Report of the JRC DigiTranScope Workshop on The Governance of Data in a Digitally Transformed European Society, Micheli M., Blakemore M., Ponti M., Scholten H., Craglia M. (Eds.).
46. Rossel, P., (2010). Making anticipatory systems more robust, Foresight 12 (3), 72-85
47. Yeung, K., (2017) 'Hypernudge': Big Data as a mode of regulation by design, Information, Communication & Society, 20:1, 118-136.