

Robot Rules: Regulating Artificial Intelligence

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1. Introduction

Artificial intelligence (“AI”) will have a profound effect on all areas of the economy, government and society. Thanks to its investment in AI development, Flanders has the opportunity to launch world-leading initiatives in the regulation of AI. This paper presents three policies which could be deployed in achieving that aim.

AI is unique as a technology, because of its ability to take decisions without being explicitly pre-programmed by humans.² For millennia, laws have ordered society, kept people safe and promoted commerce and prosperity. But until now, laws have only had one subject: humans. The rise of AI presents novel issues for which current legal systems are only partially equipped. If we are to live alongside AI, we need to address issues including responsibility for the acts of AI, how AI should take decisions, and whether there are any decisions which AI should not be allowed to take.

There may not be right or wrong answers to these ethical quandaries. However, it is essential to arrive at a solution which has political legitimacy in whichever jurisdiction it is adopted. Maintaining public trust in any new technology is crucial to its adoption and use.

This paper does not suggest substantive solutions to the legal and ethical problems raised by AI. Before we enact laws, it is first necessary to design the institutions which are qualified to write them and capable of enforcement. There are, however, several practical steps that Flanders can take to translate the developing ethical discourse on AI from vague and esoteric principles into practical governance mechanisms. These policies are in keeping with its historical traditions of academic engagement, being

¹ The views expressed in this paper are those of the author and do not necessarily reflect the views or policies of the Knowledge Center Data & Society or CiTiP. The paper aims to contribute to the existing debate on AI.

² See Jacob Turner, *Robot Rules: Regulating Artificial Intelligence* (Palgrave Macmillan, 2018), p. 16.

a hub of international trade, and strong communal identity. In brief, it is proposed that Flanders should:

- a. Engage in public outreach programs to educate the population of Flanders on AI.
- b. Develop and promote a professional-level ethics qualification for AI engineers.
- c. Pioneer a citizens' code certification for non-professional users of AI.

2. Why we need AI regulation

AI is the ability of a non-natural entity to make choices by an evaluative process. In simple terms, this refers to a system capable of autonomous decision-making. Technologies known as “expert systems” or those which use purely symbolic reasoning (i.e. “if X, then Y”) fall outside this definition, since they are deterministic, and with a given input they will always have a given output.

The most prominent and widely-used AI technology at present is machine learning (which encompasses also deep learning and reinforcement learning). However, the above definition is technology-agnostic, in that it does not focus on specific AI or data analytics methodology. This is important because any policies adopted by Flanders should – so far as possible – be future-proofed such that they apply not just to today's technologies but also those which might be developed in years to come.

AI systems give rise to novel issues because current legal and moral systems are premised on human decision-making.³ The new problems include questions of:

Who should be responsible if AI causes harm?

Who should be the owner if AI creates valuable output, which might otherwise be protected by intellectual property laws or provisions on the freedom of speech?

What parameters should AI take into account when taking decisions that involve a trade-off between competing values?

Are there any areas from which AI should be banned, or in which human intervention should be made mandatory?

Many organisations are now using AI. Increasingly advanced and meaningful decisions are now being delegated to AI systems, some of which are subject to regulation but many of which are not. As set

³ Jacob Turner, *Robot Rules: Regulating Artificial Intelligence* (Palgrave Macmillan, 2018), Chapters 1 and 2.

out further below, there are various codes of AI ethics but few binding laws as yet. The application of certain laws currently in force to AI remains untested and therefore unclear.

Organisations, including governments, which seek to use AI are therefore operating under a degree of uncertainty as to how the technology should be managed. Such uncertainty is negative for businesses, who may hold off on investing until the regulatory picture is clearer. The current situation is also damaging for the wider population, which may lose out on the advantages of AI, or alternatively may suffer harm through the unethical use of AI but lack any legal recourse or protection. It is therefore important for regional, national and supranational governments to play a coordinating role in establishing clear and effective AI regulatory policies.

3. AI ethics

It is important at the outset to distinguish AI ethics from data ethics. AI ethics involves setting principles for AI decision-making and what the consequences should be. Data ethics concerns moral questions arising from the generation, recording, curation, processing, dissemination, sharing and use of data (especially personal data – namely information pertaining to identifiable individuals).⁴ Data ethics issues can thus arise regardless of whether AI is being used, for example if all the processing is done by humans.

There is some overlap between data and AI ethics in that most AI systems in use at present require a significant data set to function properly. In addition, organisations are increasingly using AI tools to process and derive value from large data sets. The selection of an input data set, as well as the way the system is trained, can have major consequences on the output of an AI system. Many issues of bias in AI output arise from faulty input data sets. For instance, in 2018 Amazon was forced to scrap a recruiting tool which was shown to favour men over women because the data set on which it had been trained featured a disproportionate number of men.⁵

Existing personal data protection legislation and guidance – the most significant example of which is the EU's General Data Protection Regulation⁶ ("GDPR") – is insufficient to address the novel legal and ethical issues raised by AI.

Recognising the deficiency of existing data-focussed regulation to address AI ethics, European

⁴ L Floridi, M Taddeo, "What is data ethics?", *Philosophical Transactions*, Royal Society (2016).

⁵ BBC, "Amazon scrapped 'sexist AI' tool", 10 October 2018, <https://www.bbc.co.uk/news/technology-45809919>, accessed 1 December 2019.

⁶ Regulation on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (Data Protection Directive) 2016/679.

Commission President von der Leyen announced: *“In my first 100 days in office, I will put forward legislation for a coordinated European approach on the human and ethical implications of Artificial Intelligence”*.⁷ She explained further in her inaugural speech on 27 November 2019:

*“With the General Data Protection Regulation we set the pattern for the world. We have to do the same with artificial intelligence.”*⁸

EU legislation may be coming on the topic of AI ethics, but in the meantime Flanders can provide an example of regulatory techniques which might be adopted more widely elsewhere in the bloc.

4. From Principles to Practice: Recommendations for Flanders

There is no shortage of ethical codes for AI. To the contrary, numerous governments,⁹ regulators,¹⁰ private bodies,¹¹ non-governmental organisations¹² and international institutions¹³ have proposed high level standards.

Ethical AI principles are an important stepping stone in the development of an AI regulatory ecosystem, but they are not enough alone. Such AI principles lack legal force and are also vague as to their implementation.¹⁴

The world would benefit from the development of practical methods of implementing the ethical AI principles, whatever their content may be. With its major investment in AI development, focussing on a combination of in-depth research, industry applications, and education, awareness and ethics, Flanders now has a chance to transform principles into practice. Three policy proposals for Flanders are set out below.

⁷ Ursula von der Leyen, “A Union that strives for more: My agenda for Europe”, https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf, accessed 1 December 2019.

⁸ Speech by President-elect von der Leyen in the European Parliament Plenary on the occasion of the presentation of her College of Commissioners and their programme, 27 November 2019, https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_19_6408, accessed 1 December 2019.

⁹ Singapore Personal Data Protection Commission/ Infocomm Media Development Agency Proposed Model AI Governance Framework: <https://www.pdpc.gov.sg/Resources/Model-AI-Gov>, accessed 1 December 2019.

¹⁰ <https://www.mas.gov.sg/news/media-releases/2018/mas-introduces-new-feat-principles-to-promote-responsible-use-of-ai-and-data-analytics>, accessed 1 December 2019.

¹¹ Microsoft AI Principles, <https://www.microsoft.com/en-us/ai/our-approach-to-ai>, accessed 1 December 2019.

¹² Partnership on AI, Tenets: <https://www.partnershiponai.org/tenets/>, accessed 1 December 2019.

¹³ OECD AI Principles: <https://www.oecd.org/going-digital/ai/principles/>, accessed 1 December 2019.

¹⁴ Though some bodies have now started to accompany their principles with more detailed guidance, notable examples being the EU’s High Level Expert Group on AI and Singapore’s Personal Data Protection Commission.

a. Public Outreach Program

Public trust in any new technology is fundamental to its adoption in a society. Where trust is lost – whether due to ethical concerns, safety issues or otherwise – then the technology may be rejected by both members of the public as well as politicians and businesses.¹⁵

Even if certain legislation would have looked the same without public consultation, it is important lawmakers should be seen to be involving citizens and stakeholders. Doing so allows the public, and particularly those groups most affected by any new technology, to feel that they are part of the process and thereby to take greater ownership of any eventual regulations created. This is likely to precipitate a virtuous circle where collaborative regulation leads to greater uptake of the technology, which in turn leads to better feedback and adjustment of the rules.¹⁶

Two of the most important factors to the success of public engagement with regulation will be the provision of information and education concerning the new technology. These prerequisites encourage people to make informed decisions as and when their opinion is sought.¹⁷

A program of public education and consultation on AI within Flanders would allow the government to achieve two important goals. The first is educating the population as to the nature of AI technology, its benefits and its limitations, as well as the dangers which can arise if it is misused. Education would simultaneously assist in providing re-training necessary for individuals whose current roles might be one day be replaced by AI, thereby lessening technological unemployment, as well as in allaying unjustified fears about the technology. The program would not simply be a one-way street. It is important to consult the population to ensure that their views and concerns are reflected in AI regulation. Consultation will be enriched if the population already has a basic grasp of the technology on which they are being consulted.¹⁸

Flanders should take care to ensure that participation includes so far as possible a representative sample of the entirety of society, adjusted for example by features including gender, geographic

¹⁵ See the EU High Level Expert Group's Guidelines for Trustworthy AI: <https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai>, accessed 1 December 2019.; and All Party Parliamentary Group on Data Analytics, *Trust, Transparency and Tech: Building Ethical Data Policies for the Public Good* (2018).

¹⁶ Ulrich Beck, "The Reinvention of Politics: Towards a Theory of Reflexive Modernization", in *Reflexive modernization: politics, tradition and aesthetics in the modern social order*, edited by Ulrich Beck, Anthony Giddens and Scott Lash, (Cambridge: Polity Press, 1994), 1-55.

¹⁷ Morag Goodwin and Roger Brownsword, *Law and the technologies of the twenty-first century: text and materials*, (Cambridge: Cambridge University Press, 2012), 262.

¹⁸ France's Digital Republic Bill provided in Article 17 that France's national data protection agency, the National Commission for Information Technology and Liberties ("CNIL") "could steer discussions on the ethical and societal issues raised by technological progress." Pursuant to this legislative mandate, during 2017 the CNIL held 45 debates and events on AI ethics across France, involving around 3,000 people. Following this exercise in

distribution, socio-economic background, religion, and race. If groups are not included the consultation process then policy decisions will lack legitimacy amongst those parts of the population, and future social fissures may result.¹⁹ Diversity is an issue is particularly pertinent to AI, where many have already voiced fears that programs are likely to reflect the inherent biases of predominantly white, male programmers.²⁰

Centres of research and learning in Flanders focussing on AI, such as the KU Leuven Centre for IT & IP Law, as well as the Knowledge Centre on Data & Society are well placed to play a valuable role in coordinating such public outreach efforts, analysing their results, and presenting appropriate policies.

b. Professionalisation of AI Engineers

At least as far back as the late Roman period, skilled artisans and craftsmen formed associations which came to be known as guilds. Guilds were not just a set of internal rules: they were a way of life, a self-contained social system with customs, hierarchies and guiding norms. In medieval Flanders, guilds played an important role in building the region's economic strength as a global trading hub, and strong social identity, two attributes of the region which continue to this day.²¹

Guilds' standard-setting role continues today in the form of modern professional associations, sometimes referred to simply as "the professions". Richard and Daniel Susskind suggest that professions today are characterised by the following features:

*"(1) they have specialist knowledge; (2) their admission depends on credentials; (3) their activities are regulated; and (4) they are bound by a common set of values"*²²

The increasing importance of AI to society and commerce means that the time is now right for AI engineering to become a regulated profession. In its publication *The Future Computed*, Microsoft Corporation said the following:

"In computer science, will concerns about the impact of AI mean that the study of ethics will

December 2017 the CNIL published a report entitled "How Can Humans Keep The Upper Hand? The ethical matters raised by algorithms and artificial intelligence". https://www.cnil.fr/sites/default/files/atoms/files/cnil_rapport_ai_gb_web.pdf, accessed 1 December 2019.

¹⁹ Morag Goodwin and Roger Brownsword, *Law and the technologies of the twenty-first century: text and materials*, (Cambridge: Cambridge University Press, 2012), 255.

²⁰ Kate Crawford, "Artificial Intelligence's White Guy Problem", *The New York Times*, 25 June 2016, <https://www.nytimes.com/2016/06/26/opinion/sunday/artificial-intelligences-white-guy-problem.html>, accessed 1 December 2019.

²¹ Peter Stabel, "Guilds in late medieval Flanders: myths and realities of guild life in an export-oriented environment"

²² Richard and Daniel Susskind, *The Future of The Professions* (Oxford: Oxford University Press, 2015).

*become a requirement for computer programmers and researchers? We believe that's a safe bet. Could we see a Hippocratic oath for coders like we have for doctors? That could make sense. We'll all need to learn together and with a strong commitment to broad societal responsibility. Ultimately the question is not only what computers can do. It's what computers should do."*²³

In order to regulate, we need to know who we are regulating. There are many roles in computer science, including programmers, engineers, analysts, software engineers and data scientists. New ones are constantly being created as the field develops. Further, none of these are terms of art, meaning that an "engineer" in one organisation might be a "programmer" in another. Flanders should adopt a definition which focusses on functions rather than labels, such as the following:

"Professional regulation should include all those whose work consistently involves the design, implementation, and manipulation of AI systems and applications"

Flanders could become a world leader in AI regulation by creating one a certification in ethical AI. This type of standardised professional qualification could become a gold-standard regionally, without which employers are discouraged (or perhaps even prevented) from employing AI engineers in certain tasks.

Many AI engineers are clustered around a fairly small number of universities, private sector companies or government programmes and occasionally overlapping across all three. These institutions operate as bottlenecks through which AI researchers must pass, either in order to acquire their initial training or in order to gain access to the funding and wider resources necessary to progress their research. Provided that professionalism can be incorporated into one or more of these gateways, its coverage of the industry will be considerable.

c. Citizens' Code: an AI "Driving License" for non-professional AI users

Every day, members of the public take control of powerful machines capable of doing great harm both to their users and to others: the car. In addition to the general civil law (a driver who crashes can be liable for negligence), and some specialised criminal laws (such as a dedicated offence in some countries of causing death by dangerous driving),²⁴ most countries *also* require drivers to be licensed. Similar licensing regimes are used in various countries to regulate the public's engagement in activities

²³ Microsoft, *The Future Computed: Artificial Intelligence and Its Role in Society* (Redmond, WA: Microsoft Corporation, 2018), 8–9, https://msblob.blob.core.windows.net/ncmedia/2018/01/The-Future_Computed_1.26.18.pdf, accessed 1 December 2019.

²⁴ See for example s. 1 of the UK Road Traffic Act 1988, or s. 249(1)(a) of the Canadian Criminal Code.

such as flying airplanes and owning guns.

The same observations apply to AI. As it becomes more widely used, and utilities become more available and easier to operate, it is possible that manipulating AI will become as simple as creating and uploading online public videos. For this reason, it is suggested that Flanders should pioneer a citizens' code of AI ethics, namely a license in the safe and ethical use of AI which requires less training and technical knowledge than that for professional users but nonetheless gives a grounding in the relevant issues. As with driving licenses, certification under the citizens' code could be made conditional on an applicant undertaking some training and passing a test (with provision for periodic updates, to take into account technological developments).

There is a threshold question as to whom should the citizens' code of AI ethics apply. In short, the answer is that people ought to be required to adhere to certain minimum standards whenever they are in a position to exert some causal influence over the choices made by the AI. This situation might range from hobbyist programmers undertaking advanced changes, to mere users of products and services containing AI whose interactions with that AI will shape its future behaviour.

Substantive requirements for vehicle driving licenses often include compulsory training courses, and assessments - both practical and theory-based. On-going periodic assessments might also be required. Within licensing there could also be a number of categories: a license to drive a car might not qualify a person to drive an 18-wheel truck. In this vein, the European Parliament proposed "License for Users" of AI in a resolution of February 2017, though this was regrettably not adopted by the Commission.²⁵

As with professional AI programmers, there may well be a number of bottlenecks through which members of the public are likely to pass, and which allow an opportunity for AI skills and ethics to be taught. As AI grows in importance, ethics and civic values associated with its use and design might be added to compulsory courses for school children. For more advanced amateur programmers there are opportunities to impart ethics values and training via open source programming resources,²⁶ as well as adult further education. In this regard, there are (deliberately) some overlaps with the first policy proposal, of public outreach – which might be used to design and disseminate a citizens' code of AI ethics.

²⁵ European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)), Annex to the Resolution.

²⁶ See, for example, "About TensorFlow", *Website of TensorFlow*, <https://www.tensorflow.org>, accessed 1 December 2019.

5. Conclusions

It is sometimes thought that regulation and innovation are opposed to each other. This is not correct. Instead, when regulation is designed well it can create a stable framework for innovation, promoting societal trust in new technologies and encouraging entrepreneurs to build their companies in a jurisdiction.

Flanders has already recognised the connection between regulation, trust and prosperity in its three part AI Development plan. Philippe Muyters, former Minister for Innovation, was right to say:

“Flanders has the potential to be a frontrunner in artificial intelligence. A lot is already happening internationally in this domain, but Flanders has many assets to offer. It’s important to choose the right focus so that our society can fully benefit from what the future will bring.”²⁷

Drawing on its rich history of innovation in commerce and models of governance, Flanders has the capability to create real progress in AI regulation. This opportunity should be seized.

²⁷ “Flanders earmarks EUR 30 million for AI development”, Flanders Investment & Trade website, <https://www.flandersinvestmentandtrade.com/invest/en/news/flanders-earmarks-eur-30-million-ai-development>, accessed 1 December 2019.