The contemporary values of operadiction regimes

1. Introduction

Value discourse is omnipresent in contemporary debates on the new modes of governance, surveillance and economic surplus extraction enabled by technological changes. Indicatively, the EU's White Paper on Artificial Intelligence has promised to regulate the 'development and deployment of AI' in a manner that reflects 'European values' – a grand proclamation that refers to fundamental rights and human dignity but ultimately dilutes in procedural data protection standards and ethical guidelines.[1] Such invocations of 'values' in discussions on the issues related to accelerating technological transformation tend to take one of two paired forms: as attempts at *codification* or *decoding*. In the former case, the aim is to attune new socio-technical forms of governance or market behavior with 'values' presumed to be at the core of liberal legal ordering. Keats Citron and Pasquale, in this vein, argue that the 'American due process tradition' can and should provide 'basic safeguards' in the context of algorithmic and data-driven risk scoring.[2] In his account of how the 'law of global governance' needs to respond to the 'challenges of new technology', Benvenisti in turn invokes 'democratic values' to demand political points of access to the big data 'stored on private and public servers and utilized by private and public actors'.[3] In the writings of leading scholars on law and tech, we find a reaffirmation and rearticulation of 'traditional rule-of-law values' and the 'institutional forms that those values require'.[4] This entails both a sobering observation that this cherished 'rule of law' ideal was itself only afforded by a specific socio-technical environment of print and text (an argument made by Hildebrandt),[5] as well as a blossoming industry of attempts at transposing or translating these value-systems to new technological settings.[6] Cohen argued in this sense that 'algorithmic processes' need to be 'redesigned to incorporate … rule of law criteria' – an exercise in technical 'redesign' that codes the 'foundational' values of 'generality, stability, equality and publicness' into the conduits of new decision-making machines.[7] These projects of *codification*, in other words, display a confidence in and

[1] It is remarkable how this value discourse – values defined as 'fundamental', 'European' and 'shared' – is grafted onto a pre-existing language of multilateralism and the EU's strategic positioning as a normative force: in the development of artificial intelligence, which 'can be a driving force to achieve the Sustainable Development Goals', the EU will 'strive to export its values across the world'. EC, *White Paper on Artificial Intelligence – A European Approach to Excellence and Trust,* 19 February 2020, 1-3 and 9.

[2] D. Keats Citron and F. Pasquale, "The Scored Society – Due Process for Automated Predictions", *Washington Law Review,* Vol 89:1, 2014.

[3] E. Benvenisti, "EJIL Foreword – Upholding Democracy Amid the Challenges of New Technology: What Role for the Law of Global Governance?", *European Journal of International Law,* Vol. 29:1, 2018, 80-81.

[4] J. Cohen, *Between Truth and Power – The Legal Constructions of Informational Capitalism,* OUP, 2019, 204.

[5] M. Hildebrandt, *Smart Technologies and the End(s) of Law: Novel Entanglements of Law and Technology,* Cheltenham, Edward Elgar, 2015.

[6] See, for example, F. Pasquale, *New Laws of Robotics – Defending Human Expertise in the Age of AI,* Harvard University Press, 2020.

[7] Cohen 2019, *supra* n. 4, 247. *Cf.* M. Zalnieriute, L. Bennett Moses, G. Williams, "The Rule of Law and Automation of Government Decision-Making", *Modern Law Review,* Vol. 82:3, 2019, 425 (on how 'the automation of government decision-making can both enhance and detract from rule of law values'); L. Diver, "Digisprudence: The Design of Legitimate Code", *Law, Innovation and Technology,* Vol. 13:2, 2020 (on how rule of law values can be 'imported' into code design). Other authors looked beyond 'traditional' rule of law criteria and identified values implicitly embedded in analogue, atomistic and court-centred evaluations: spaces of slowness and delay, interpretation and contestation, representation and authorship, uncertainty or discretion. A. Rouvroy, "The End(s) of Critique: Data-Behaviourism vs. Due-Process", in M. Hildebrandt & E. De Vries (eds.), *Privacy, Due Process and the Computational Turn. Philosophers of Law Meet Philosophers of Technology*, Abingdon, Routledge, 2012; M. Hildebrandt, "Law as Information in the Era

commitment to value systems to be extended to new practices of governance. As Kingsbury describes this sensibility: 'it was hoped [that] lawyers would cast upon the rushing gov-tech machine an enmeshing filigree of formal law … These legal rules, techniques, institutions, and values did not have to be newly concocted – for the most part the need was just to articulate and deploy them at speed and in the right ways'.[8]

In the case of *decoding*, by contrast, the intention is not primarily to instill values already known and presumed present in liberal legal ordering but to reveal the – often pathological – value systems that are implicitly encoded in new, technologically mediated, decision-making tools or economic practices. In this sense, scholars have highlighted the patriarchal,[9] class-based,[10] and racialized hierarchies performed in and reproduced by regimes of algorithmic governmentality.[11] In a powerful account of how new technological tools are reconfiguring bordering practices, Tendayi Achiume (UN Special Rapporteur on Contemporary Forms of Racism), for example, set out to expose the 'logics, principles [and] ideologies' that are implicated in 'information technologies for border enforcement and administration', referring to 'techno-chauvinism', 'racial and religious supremacy', 'ethnonationalism', 'colonial and imperial projects', or 'capitalist profit-making'.[12] A range of responses subsequently seek to extricate the 'bias' from machine learning by qualifying the design of algorithmic systems as a site of normative agency and accountability. This is expressed in Eubanks' proposal for a 'Hippocratic oath for data science' and repeated calls to clean the training data of computational learning – efforts to insulate the clean correlations of the mathematical model from the problematic politics or prejudices present in its social or institutional environment.[13]

Both registers of engagement or intervention (which are of course described here in a brief and somewhat reductive form) are marked by a particular approach to the relationship between algorithmic instruments and the socio-political or ethicopolitical 'values' that should either guide their operations or be extricated from them. They both work through a separation between identifiable, pre-existing value-systems and the algorithmic regimes of governance under scrutiny. The 'values' informing reform and critique are situated outside the regimes and technologies of governance on which they can be exerted. It is precisely this gap – this external evaluative vantage point – that provides the space for comparison and critical inquiry: 'European values', 'democratic values' or 'rule of law values' promise a set of institutional arrangements for the good, ethical and normal not to be transgressed by algorithms always at the risk of reproducing

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of Data-Driven Agency", *Modern Law Review,* Vol. 79, 2016; L. Diver, "Computational Legalism and the Affordance of Delay in Law", *Journal of Cross-disciplinary Research in Computational Law,* 2020.

[8] B. Kingsbury, "Human Rights in a Use Case World", 2021 (paper on file).

[9] See, for example, K. Crawford, "Artificial Intelligence's White Guy Problem", *New York Times,* 25 June 2016.

[10] See, for example, C. O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, New York, Crown, 2016; V. Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police and Punish the Poor,* New York, Palgrave Macmillan, 2018.

[11] See, for example, S. Noble*, Algorithms of Oppression How Search Engines Reinforce Racism*, New York, NYU Press, 2018; R. Benjamin, *Race After Technology,* Boston, Polity, 2019.

[12] T. Achiume, "Race, Borders, and Digital Technologies: Call for input", 15 May 2020.

[13] In Eubanks 2018, *supra* n. 10. As Amoore has similarly observed, '[t]he dominant critical perspectives on algorithmic decisions have thus argued for removing the "bias" or the "value judgements" of the algorithm, and for regulating harmful and damaging mathematical models'. In L. Amoore, *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others,* Durham, Duke University Press, 2020, 5.

'[s]tructural categories of discrimination and exclusion'.[14] Without questioning the merit of these reformist projects and critical interventions, this chapter takes a different approach, inspired by Amoore, to investigate how 'algorithms are not so much transgressing settled societal norms, as establishing new patterns of good and bad, new thresholds of normality and abnormality'.[15] With Amoore, we thereby seek to understand how algorithms in AI applications present discrete 'ethicopolitical arrangement[s] of values, assumptions, and propositions about the world'.[16] This entails a shift away from a representationalist frame (where technological regimes can be perceived as enacting or deviating from value systems already existing outside their operations), to a language of performativity that seeks to register how new realities (and associated forms of temporal or informational value) are technologically enacted. In contrast to Amoore, however, who portrays these performative enactments as forms of truth-telling (*regimes of veridiction*),[17] this contribution seeks to foreground not the epistemological but the ontological tenets of algorithmic governmentality.[18] *Regimes of operadiction,* the analytic introduced in this chapter, are technologically mediated forms of governance that constantly produce and perform the realities through which they operate (as elaborated in section 2). We argue that the values at play in these techno-governance regimes cannot strictly be understood in representational terms, but only as entangled with these new ontological formations, which we trace in temporal and informational terms (as elaborated in section 3).

Suspending the representational perspective raises particular concerns in terms of possibilities for critical evaluation and political intervention, as elaborated in section 4. Those concerns are heightened by the economic stakes of the emerging regimes of governance that we observe. The recent Franco-German proposal for a European data infrastructure, the Gaia-X project, is a case in point. GAIA-X is a major new initiative that will undergird the sorts of technologies relevant to our study, by developing European infrastructure for the movement and management of data. It promises an impressive feat of public policy-making, which would release the disposition of data from a small number of data chokepoints over which Europe and European entities do not have much control. 'European values' are central to the project's public pitch as well as its technical elaboration:[19] the initiative proposes to develop the Europe-

[14] C. Aradau and T. Blanke, "Politics of prediction: Security and the Time/Space of Governmentality in the Age of Big Data", *European Journal of Social Theory,* Vol. 20:3, 2017, 385 (making the observation that the correlational logic of 'pure relationality' in predictive analytics 'elude[s] the structural categories of discrimination and exclusion').

[15] Amoore 2020, *supra* n. 13, 6. For this reason, Amoore agues, '[o]ne cannot sustain a search for codes of ethics that instill the good, the lawful, or the normal into the algorithm … [O]ne cannot stand outside the algorithm to judge its morality, its role in doing good or evil. Instead, one must begin from the iterative writing that is itself generative of fungible thresholds of the good and the bad'. *Ibid.,* 6 and 158.

[16] *Ibid.*

[17] *Ibid.,* 5-6 ('what matters is not … the identification and regulation of algorithmic wrongs [but] how algorithms are implicated in new regimes of veridiction, new forms of identifying a wrong or of truth telling in the world').

[18] The regimes on which this contribution focuses can thereby be understood as 'apparatuses' in Barad's use of the term – as 'specific material reconfigurings through which 'objects' and 'subjects' are produced'. '[A]pparatuses are the material conditions of possibility and impossibility of mattering; they enact what matters and what is excluded from mattering'. For Barad, this calls for a performative perspective (a rupture from representationalist thought) that 'allows matter its due as an active participant in the world's becoming'. The apparatus, in this sense, enacts 'agential cuts' that are both 'ontic and semantic' – it is an ontological 'boundary-making practice'. Important for our account, Barad add that apparatuses are 'material configurations or reconfigurings of the world that re(con)figure spatiality and temporality'. In K. Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning,* Durham, Duke University Press, 2007, 135, 146, 148, 175, 333.

[19] Pitch and Technical standards documents.

wide architecture on the basis of European values and for the creation of European values. Despite the pervasive reference to (European) values in the various foundational documents, however, values encompass a still impressionistic and sometimes contradictory mix that prioritizes free market mechanisms, privileging competition and private property ownership by individual entities, alongside national regulatory preferences. The close interconnection of economic and societal interests is similarly manifest in the European Commission's data strategy. In the launch document for its European data strategy, the EC proposed 'to seize the opportunity presented by data for social and economic good…. That potential should be put to work to address the needs of individuals and thus create value for the economy and society.'[20] Equally, 'Europe's data strategy relies on a thriving ecosystem of private actors to create economic and societal value from data.'[21] Finally, 'A European way for handling data will ensure that more data becomes available for addressing societal challenges and for use in the economy, while respecting and promoting our European shared values.'[22]

Together, the European data strategy and GAIA-X raise the question whether even new modes of governance such as we describe with operadiction remain ineluctably within an economic framework for value production. If so, is that a capitalist framework (meaning what?), and what is the relationship between the (governance) technology and the framework? At the heart of these questions lies a puzzle concerning the situation of the individual subject among these new modes of governance and the assorted technologies and economic logics with which they are entangled. Though that puzzle and these broad questions go beyond the scope of this chapter, we will return to these issues in the conclusion, when we consider the implications that non-representational modes of governance pose today for critique.

2. Regimes of operadiction

Regimes of operadiction simultaneously produce both their own governance scripts and the ontology of their operation, the realities in which they apply. We mean the neologism to highlight a combination of two sorts of operation. One operation continuously recreates realities out of information, in a reiterative process of patterned construction; the other instantaneously operationalizes those realities. Both operations together are key to operadiction: if the continuously reconstituted information/reality is not immediately actionable (the second operation), the output remains in the realm of something like recommendation, representational in character; and if the operationalization is not predicated on the constant reproduction of a reality drawn out of immanent possibilities in the data (the first operation), the output remains in the realm of a predefined script, again representational in character. Subsymbolic AI technology, relying on signal strength in neural networks to achieve pattern recognition, drives the contemporary practices that we associate with regimes of operadiction, and that technology includes things like computing power, infrastructure, and data. But the practices to which we refer occur in human-machine networks, or institutional assemblages. In other words, operadiction is as much about an emergent mode of managerial governance as it is about the technology that contributes to the governance institution.

[20] EC, A European strategy for data, p5.
[21] EC, A European strategy for data, p16.
[22] EC, A European stategy for data, p26.

Let us illustrate this with a brief example of a particular regime of operadiction at work. For several years now, a radical change in practices of border control has been professed.[23] In the European Schengen Area this has been expressed as the need for an infrastructure of 'virtual borders'.[24] Krum Garkov, the Executive Director of eu-LISA (the European Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice), argued in this context that 'the area of internal security is going through a major transformation, moving in part from the physical to the virtual world' – a world dependent 'on data and information'.[25] Aimed to guarantee smooth mobility while optimizing security, this regime of 'virtual borders' relies on and operationalizes the 'interoperability' of databases in the EU: the creation of an informational infrastructure that interconnects and processes personal data of third-country nationals from a variety of different sources (including visa information, biometrics and criminal records data).[26] Yet, this data deluge poses particular problems:[27] Europol's Deputy Executive Director recently lamented that the organization is 'under pressure due to increasing amounts of data', and noted the need to 'transform data into information'.[28] As systems of analysis and decision-making are flooded with data, he expressed, what is really required is 'an accessible interface with actionable information'.[29] Echoing this operational orientation towards 'actionability', Olivier Onidi, EU Deputy Director-General of DG Migration and Home Affairs, equally observed that 'data' should be rendered 'more illustrative for border guards' in the process of daily decision-making. The 'virtual border' demands visual inscriptions – actionable scores and signals.

In the conceptualization and construction of this operational system, hope is vested in artificial intelligence as technology of translation – as a way of transforming 'data into information'.[30] A recently published EU strategy on *Opportunities and Challenges for the Use of Artificial Intelligence in Border Control, Migration and Security* therefore sets out various techniques aimed at distilling 'deeper insights from the increasing quantities of available data'.[31] At the core of the strategy lies the promise of algorithmic risk assessment: the detection of 'irregular patterns' not 'identified as strange before' (defined as 'general risk assessment') that can inform how to 'cluster' and 'classify' people for particular purposes ('individual risk assessment').[32]

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[23] *Cf.* L. Amoore, *The Politics of Possibility – Risk and Security Beyond Probability,* Duke University Press, 2013; D. Broeders and H. Dijstelbloem, "The Datafication of Mobility and Migration Management", in I. Van der Ploeg and J. Pridmore (eds.), *Digitizing Identities: Doing Identity in a Networked World,* London, Routledge, 2016; M. Longo, *The Politics of Borders: Sovereignty, Security and the Citizen after 9/11,* CUP, 2017.

[24] See eu-LISA, *Strategy 2014-2020*, 2014, https://www.eulisa.europa.eu/Publications/Corporate/EL0114595ENC.pdf (consulted 22 February 2021); EU Commission, *Stronger and Smarter Information Systems for Borders and Security*, Communication from the EU Commission to the European Parliament and the Council, 2016.

[25] Eu-LISA 2014, *ibid.,* 6.

[26] Regulation (EU) 2019/817. For a critical analysis of the interoperability framework, see N. Vavoula, "Interoperability of EU Information Systems – The Deathblow to the Rights to Privacy and Personal Data Protection of Third-Country Nationals?", *European Public Law,* Vol. 26:1, 2020.

[27] *Cf.* F. Johns, "The Deluge", *London Review of International Law,* Vol. 1:1, 2013.

[28] eu-LISA, *Conference Report: The New Information Architecture as a Driver for Efficiency and Effectiveness in Internal Security,* 16 October 2019, Tallinn, 26.

[29] eu-LISA, *Conference Report: EU Borders - Getting Smarter Through Technology,* 17 October 2018, Tallinn, 17.

[30] While Onidi noted that 'machine learning has potential' for 'vetting persons who come to the EU', 'screening their application files' and conducting 'virtual border checks', Maria Bouligaraki, the head of eu-LISA's Test Transition Unit, argued that 'deep-learning systems' are essential 'to integrate large, unconnected silos of data'. eu-LISA 2018, *ibid.*, 12 and eu-LISA 2019, supra n. 24, 40.

[31] European Commission (DG for Migration and Home Affairs), *Opportunities and Challenges for the Use of Artificial Intelligence in Border Control, Migration and Security*, European Commission, Brussels, 2020, 5.

[32] *Ibid.,* 10, 58, Annex B. The strategy clarifies that 'classifications' (used for visa applications or border checks) 'could be defined based on a risk threshold or specific indicators, or less pre-defined … based on some learned similarity'.

These classifications, the strategy envisages, could 'trigger' different, 'automated' responses – 'flags' and 'notifications' inducing immediate institutional action.[33] A recent pilot project funded by the EU Horizon 2020 scheme articulates this objective in clear terms: 'risks are key to the performance of the system', the technical framework of iBorderCtrl states, 'as they declutter the information by compressing all data into meaningful actionable risk scores'.[34] This entails an algorithmic 'risk–assessment routine which aggregates and correlates the risks estimations [from] the processing of the travellers' data', as well as an 'advanced post-hoc analytics that will help identify new patterns'.[35] The tools for 'compressing' and 'correlating' data through predictive patterns are captured in indicators and inscriptions with immediate operational use.[36] Yet, these assignations, crucially, do not imply correspondence to predefined normative criteria of 'risky' behaviour: the associative, anticipatory rationality of data-driven risk modelling precludes any possibility of defining what is measured outside of the inferential process from which it is derived.[37] The 'actionable' indicator has no representational orientation – its value derives from both the reflex responses it induces and the capacity for constant adaptation it entails as new patterns are 'uncovered' in data.[38]

While a full empirical exploration of the 'virtual border' is far beyond the scope of this contribution,[39] this brief description allows us to draw out several salient features of governmental regimes of operadiction. Aimed at translating the current data deluge into sets of 'actionable' associations, the 'pairings of list and algorithm' in these practices constitute a governance mode distinct from modernist schemes of planning, placement and ordering that have traditionally occupied critical writing in international law.[40] Instead, the algorithmic tools and routines it employs are oriented toward anticipation, sensing or simulation – toward inviting uncertain futures in a governable present.[41] The 'compression' of data in 'actionable' scores can

[33] *Ibid.*, Annex B.
[34] See https://www.iborderctrl.eu/Technical-Framework (archived by author).
[35] *Ibid.*
[36] As the EU strategy further states, '[b]oth supervised and unsupervised [artificial intelligence] could be considered, respectively: triggering automated risk scoring based on observation or prediction [of] patters pre-defined as warning signals; or unsupervised uncovering of relations'. European Commission 2020, *supra* n. 27, Annex B, 90. Interestingly, the strategy notes that this use of AI for the detection of 'irregularities' in travel patterns 'is similar to fraud detection by analyzing spending behavior, or cybersecurity by analyzing network traffic patterns, both of which are prevalent AI use cases, particularly in the financial services industry'.
[37] European Commission, *ibid.*, Annex B, 89 ('[t]he benefit of using AI is that it can … uncover[] correlations between input data and classification outcomes', producing 'classifications' on the basis of 'learned similarity').
[38] The aim of 'general risk assessment' as indicated by the EU strategy is precisely to find such 'patterns'. In *ibid.*, 10. This post-epistemological nature of data-driven governance has been described from a variety of perspectives. See, for example, A. Rouvroy and B. Stiegler, "The Digital Regime of Truth: From the Algorithmic Governmentality to a New Rule of Law", *La Deleuziana,* Vol. 3, 2016, 9 ('we feel that with big data we no longer have to produce knowledges about the world, but that we can discover knowledge directly in the world'); F. Johns, "Data, Detection, and the Redistribution of the Sensible in International Law", *American Journal of International Law,* Vol. 111:1, 2017, 98-99 (on how 'accumulated human knowledge and experience' are displaced by the 'fleeting associations foregrounded in data mining' – by '[p]atterns appearing momentarily in data'); D. Chandler, *Ontopolitics in the Anthropocene: An Introduction to Mapping, Sensing and Hacking,* London, Routledge, 2018.
[39] For a much more elaborate engagement with the technical and institutional infrastructure of 'virtual borders', the inequalities these engenders and the political practices it disables, see D. Van Den Meerssche, "Virtual Borders – International Law and the Elusive Inequalities of Algorithmic Association" (on file).
[40] *Cf.* F. Johns, "Global Governance through the Pairing of List and Algorithm", *Environment and Planning D*, Vol. 34:1, 2016; F. Johns, "From Planning to Prototypes: News Ways of Seeing like a State", *MLR,* Vol. 82:5, 2019.
[41] Such devices have been receiving attention in critical security studies. See A. Amicelle, C. Aradau and J. Jeandesboz, "Questioning Security Devices: Performativity, Resistance, Politics", *Security Dialogue,* Vol. 46:4, 2015; M. De Goede, "The Chain of Security", *Review of International Studies*, 44:1, 2018. For an account of the shift from modernist modes

then be understood, in Amoore's terms, as a particular mode of 'writing the contours of [the] world' that arrays 'possible futures' in a manner allowing for 'imminent decisions'.[42] This algorithmic governmentality, as we observed, does not aspire to construct causal claims to be tried and tested, but works through the emergent correlations and connections present within the data itself.[43] In its aspiration to govern through relations immanent in data, this regime defies both representation and epistemological evaluation – it works not with causes but with immanent patterns, not with representations but with actionable signals.[44] These are central tenets of what we describe as the regime of operadiction.

Let us delineate the analytic of operadiction with two ideal-type points of comparison: one, already referred to, is the veridiction regime, the other we refer to as the classical regime. We distinguish the classical regime as one that aims to direct the present in a determinate way towards a closed future or end point. Maintaining the Foucauldian register, the classical regime is a relatively straightforward disciplinary regime. An example is the collective security regime that aims at the permanent suppression of militarized conflict by means of a prohibition on military force, with the exception being the valid use of collective force to maintain the prohibition: this is a closed, coercive regime. Veridiction regimes, keyed to a population rather than a particular will, do not exhibit the same fixed means and end point. Rather, they represent a way of generating knowledge for open-ended management routines capable of adapting to changing conditions.[45] The veridiction regime aims to manage the present through an open future, without any classical end point (eg, the economic regime that aims at the maximization of market participation). Regimes of operadiction and veridiction share these aspects of open-ended and adaptive modes of governance. The veridiction regime operates as a sort of knowledge tool (and as such is appropriate to Risk Society, though not limited to it), to produce a governmental truth capable of affirming the powers appropriate to manage a population, to maximize the population's productivity under competitive conditions that constantly require more production. The operadiction regime similarly works to produce a governmental truth, but does so at the same time as it produces the reality of the

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of governance – based on causality, rationality and universality – towards governmental forms of 'sensing' on the basis of 'correlational sight', see Chandler 2018, *supra* n. 34.

[42] Amoore 2013, *supra* n. 19, 7 and 9.

[43] As Amoore notes in her diagnosis of algorithmic decision-making: 'all talk of cause and effect is secular history', since current forms of governance do 'not seek a causal relationship between items of data, but work[] instead on and through the relation itself'. Amoore 2013, *supra* n. 19, 59. This shift from causal to correlation, from deductive to inductive, modes of governance is also observed in Chandler 2018, *supra* n. 34 ('rather than seeking to understand hidden laws of causality [sensing] relies upon … the power of correlation'); Rouvroy and Stiegler 2016, *supra* n. 1, 8 (on how algorithmic governmentality entails 'the passage from a deductive logic to a purely inductive logic').

[44] Chandler 2018, *supra* n. 34, 117 ('[d]ata-driven approaches … no longer rely on specialist knowledge and expertise: correlational algorithms based on mass data sets take the 'knowledge' out of knowledge production').

[45] Starting with this foundational description from Foucault's lectures from 1978-79: 'The regime of veridiction is, in fact, not a law of truth, (but) the set of rules enabling one to establish which statements in a given discourse can be described as true or false. Undertaking the history of regimes of veridiction—and not the history of truth, the history of error or the history of ideology, etc.—obviously means abandoning once again that well-known critique of European rationality and its excesses…. For example, when I say that critique would consist in determining under what conditions and with what effects a veridiction is exercised … the problem would not consist in saying: Look how oppressive psychiatry is, because it is false. Nor would it consist in being a little more sophisticated and saying: Look how oppressive it is, because it is true. It would consist in saying that the problem is to bring to light the conditions that had to be met for it to be possible to hold a discourse on madness…. It is not so much the history of the true or the history of the false as the history of veridiction which has a political significance.' *The Birth of Biopolitics,* 35-37.

population to which it applies. It does so not by modeling the health and productivity of a population, but by constituting its vitality in the first place.

The operadiction regime does not govern in the space between a source of information (such as a model or a market) and a material population, as does the veridiction regime, but by immediate access to a material population constituted out of information and governed in that same constitutive act (for instance by means of pattern recognition). While regimes of veridiction operate on an epistemological terrain, the workings of operadiction regimes are ontological. We note, however, that the technological assemblages to which we refer operate on the basis of information processing. Information might sooner be associated with the epistemological orientation than the ontological. But information is also material, and the operadiction regime exploits and operationalizes that materiality as arguably no other governance regime has before. As a result, the operadiction regime does not merely manage a population in the present by informing about its conduct relative to an open future (eg, via indicators that use information snapshots to inform about sustainability); instead it aims constantly to recreate a population in the present, by reconstituting the patterned relations by which its population is intelligible, and selectively foreclosing determined futures imminent in those patterns (eg, with risk assessment algorithms that iteratively reconstitute a constant flow of data streams to act now on possible future threats).[46]

3. Temporal values and data values

As a descriptor of the utility of data in neural network processes, value is a function of accuracy and signal strength. The data point will be legible to sub-symbolic AI on the basis of specific training histories, and the aim of accuracy and signal strength is, roughly, to maximize preferred attributes (as efficient solutions to problems defined in the code) learned in training -- though the training history may sometimes be or become impenetrable to scrutiny, as in cases of deep learning. Accuracy conveys the degree to which data points conform to information learned in training. Signal strength conveys the relative prevalence of recognizable attributes for pattern recognition purposes. The value of any data point in sub-symbolic AI applications is contingent on the way it 'shows up', once legible, in the neural network – its distribution, its links with other data points, etc. After data are made legible by a training history, their value depends on their relative situation in the data set, and the more or less accurate pattern recognition possibilities that arise out of their constellated situation in the neural network.

This sort of informational value has also been incorporated into neoliberal governance routines and discourses, in support of specific normative and distributive commitments associated with neoliberal principle. As famously propounded by Hayek,[47] the market has been construed as a vast information processor, a complex algorithmic machine like an artificial intelligence, with a neural network architecture capable of yielding efficient computational outputs not otherwise achievable by humans. This imaginary has privileged the rise, associated with neoliberalism, of market-based policy to direct social governance generally. In turn, the celebration of automated information processing has elevated

[46] We draw in this paragraph on one of two uses of inform: the intransitive use, which speaks about something; the other use, which we will also draw on is the transitive, which acts directly on its object. This dual character has lately been invoked in relevant studies by Rouvroy and Hildebrandt, among others.
[47] Hayek, Hayek on Hayek…

the application of computational neural networks and artificial intelligence as ideal socio-economic technologies, suited to market-oriented governance institutions that privilege their operation. Thus, the technical imaginary supported the policy imaginary, which, in return, privileges the technical imaginary. This mutual interrelationship can be observed in blended economic and programming vocabularies associated with the value function, the technical term for the efficient optimization of an objective (or solution to a problem) defined in code. This link to neoliberal celebration of information processing technology conforms to the veridiction regime, in which the market becomes the preferred technology to affirm policy determinations bearing on a population. Indeed, this is the context in which Foucault developed the notion.[48] But the link of data processing with the market also supports a key facet of the operadiction regime, namely emergence. The value of data becomes contingent on the possibility of emergent patterns immanent in the data set. This links with the temporal value, privileging a sort of immediacy, to which we turn in a moment. It also undergirds what Karen Knorr Cetina has called the flow architecture of a global reflex system, which we will return to after considering the temporal value.

Returning to our points of comparison: the temporalities of both classical and veridiction regimes, despite their differences, link value to representation, whether in terms of a determinate goal (eg, the glory of the monarch) or a technology for techno-bureaucratic guidance (such as the market). Representation involves a relationship in time in which the represented object exists independently and prior to the observation of the relevant (governance) agency. The governance relationship goes forward in linear fashion: from preexisting object, to representation, to action predicated on a causal supposition that it will produce a result favorable to the preferred disposition of the object in question. The operadiction regime, by contrast, links value to iterative techniques, or the constant reproduction of an unstable present. The linear temporal condition of the representational relationship is replaced by a recursive temporal condition, and causality is left behind. The governance routine constantly creates and recreates the reality upon which it works, and does so simply on the basis that it does work, without devotion to any predefined causal relationship; the representational and causal steps are suppressed. Relative to both the classical and veridiction regimes, operadiction collapses a distance that the others preserve between the governmental regime and the object of its governmental action. A quotidian example is the recommender system that tells its user the item that it wants to receive next, such as Amazon uses to sell product. The recommender system creates the user's desire on the basis of a unique algorithmic assignation that will change with the next click.

Operadiction regimes valorize an unstable present by foreclosing potential futures of individuals subject to the exercise of governance (think of the AIs that sort students, determine bail, and otherwise allocate resources). The determinate but open-ended temporal condition will be familiar from analysis of the Risk Society, in which advancing scientific productivity, including within itself a reflexive goal of security, produces ever more risk even as it produces ever more risk management. The operadiction regime, however, arguably leaves behind the governmentality of the Risk Society insofar as the technologies of operadiction dispense with the reflexive character of the relationship to risk. The reflexive relationship to risk characteristic of risk society is one in which every activity entails a choice, the options of which may be measured or perceived for governance purposes in terms of relative risk. It is this constant reflexive relationship to risk-as-choice that produces the positive feedback loop associated with risk society: every choice for risk management only ever produces a condition with more, new choices to manage for risk. This hyperproduction of reflexive risk situates, in the genealogy of operadiction regimes, as a driver behind

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the ascendance in governance institutions utilizing increasingly powerful computational and probabilistic technologies. But the regime of operadiction, enabled by advances in computational power and sub-symbolic programming design, dispenses with the choice. Risk becomes a sort of auto-ontological exercise, an immediate intervention. Borrowing from separate bodies of work by Antoinette Rouvroy and Karen Knorr Cetina, we call this a shift from reflexive to reflex.

Rouvroy differentiates expressly between reflexivity and reflex, which Knorr Cetina, writing nearly two decades ago, did not. We start with Knorr Cetina's work to build up to the distinction. Writing in the early 2000's, Knorr Cetina elaborates what she calls a global reflex system in the context of global currency exchanges. The global reflex system is a scopic technology; it projects a changing stream information on a continuous basis. Because it projects a fluid stream of information, Knorr Cetina describes it as a flow architecture. She is clear that the notion of flow is not used as a metaphor.[49] Rather, '[t]he defining characteristic is that flow refers to the level of reality itself, which we claim has been temporalized and streamed'[50] and is characterized by 'ontological fluidity and multiplicity.'[51] The constant engagement that Knorr Cetina observes of currency traders with a digitally coordinated stream of constantly changing market information yields 'the projection and reconstitution of this reality as one that is continually emerging'.[52] That emergence is necessarily supported by scopic technologies, technologies that assemble and project information for a coordinated global assemblage.[53] The scopic technologies that Knorr Cetina observes in the financial world play a similar role to sensory technologies incorporated into the border control regimes that we discussed briefly above. The scopic technologies lead Knorr Cetina to describe the flow architecture as a reflex system. Reflex has two connotations here, referring to the instantaneity of reflex action, but also to the technology of projected images associated with cameras and lenses. In this case, the constant projection of changing information creates an immersive world of ontological fluidity.

Rouvroy goes one step further, differentiating reflex from reflexivity. The distinction is based on the observation that the instantaneity of reflex closes off one of the central conditions of reflexivity, in which there is a distance between the agent and the object of its action. The relationship between the two, under conditions of reflexivity, is not automatic or inevitable: it is one construction among possible constructions, and entails a deliberate choice of association or action. This applies to the realm of the subject alienated from object and other subjects. But Rouvroy questions whether that subject can continue to exist in the realm governed by automated decision making of algorithmic processes like artificial intelligence, operating at speed. Because in familiar governance contexts, there must be some inducement or control, coercion, etc., of the subject, to regulate its relationship with other subjects and objects. But in the algorithmic situation, the subject is entered into a flow of signals that collapses the distance between the subject and the other subjects or objects with which it might interact. There is no longer any alienation between them: all are transformed into signals; so there is no longer any construction by the subject of the relationship to objects and other subjects: that is established instantaneously, over and over again, by pattern recognition processes that determine the physical world (eg, via the internet of things), communication processes (eg, via media platforms), etc. Accordingly, Rouvroy argues that this mode of governance 'will affect you at the level of reflex rather than at the level of reflexivity', and so '[w]e bypass

[49] KKC 2007, 129.
[50] KKC 2007, 129.
[51] KKC 2007, 132.
[52] KKC 2004, 17.
[53] KKC 2003.

subjectivity by automatization.'[54] Here Rouvroy is speaking directly to the phenomena we associate with operadiction, and in very similar terms: 'We by-pass the subjectivity and we thus arrive at a kind of very objective operability – a kind of machinic objectivity.'[55]

Rouvroy describes the stakes of operadiction's treatment of the subject in temporal terms:

> The only 'subject' algorithmic governmentality needs is a unique, supra-individual, constantly reconfigurated 'statistical body' made of the infra-individual digital traces of impersonal, disparate, heterogeneous, dividualized facets of daily life and interactions. This infra- and supraindividual statistical body carries a kind of 'memory of the future' whereas the strategy of algorithmic governmentality consists in either ensuring or preventing its actualization.[56]

In identifying the stakes with the prevention or the actualization of possible futures, Rouvroy meets concerns raised by Amoore, when Amoore warns of a modality of governance that aims 'to preempt an unfolding and emergent event in relation to an array of possible projected futures.'[57] Amoore describes the stakes starkly: 'The tyranny of proliferating machine learning algorithms resides not in relinquishing human control but, more specifically, in reducing the multiplicity of potential futures to a single output.'[58] Amoore recognizes, however, that 'the neural net does not reduce multiplicity as such.'[59] The AI may comprise countless possible presents, but it will disallow and foreclose specific possible futures immanent in the legible data set available in the neural network. It is to this possibility that we mean to turn critical attention – away from any representative disjuncture that an AI may or may not exhibit, towards the actual work that it does to produce presents and delimit futures on the basis of values immanent in the data made legible to it.

4. Critique [this remains extremely provisional]

What sort of critique applies in this auto-ontological context? Let us build up again from critiques of the other two ideal-type regimes, classical and veridiction. Critique of classical regimes has been organized around the representations made by or associated with international legal regimes and instruments, seeking out the space between the representation and reality, between the guiding norm and the concrete institutional effect, to demonstrate divergence there. International criminal law's oft-stated mission to end impunity, for instance, has been subject to trenchant critique for actually preserving impunity (for patterns of global immiseration) while punishing a few (for atrocities in a geographically delimited part of the world).[60] Critique in this register approximates ideology critique, when it does not simply target straightforward persecution or the like. Critique of veridiction regimes has been organized around the way the regime privileges particular arrangements of populations, and the power relations they comprise. The critique shows up the particular values privileged by (the knowledge produced by) dominant veridiction

[54] Rouvroy 2016, p. 12.
[55] Rouvroy 2016, p. 12.
[56] Rouvroy 2012, p. 11.
[57] Amoore 2013, p. 9.
[58] Amoore 2020, p. 80.
[59] Amoore 2020, p. 80.
[60] Krever

regimes, such as global markets, for instance insofar as they produce knowledge (to use a broadly anecdotal example) that makes it easier to imagine the end of the world than the end of capitalism. The truth affirmed by the veridiction regime, including the values and relations that it validates, is always also an artefact of power. It tends by definition to (seek to) enroll ever more of a population in the service of re/production, in support of the knowledge production apparatus on which the governmental position depends, whatever else the individual members of a population may strive and struggle for. The veridiction regime models power's efficacy, and critique aims to highlight or reveal the values made legible by its knowledge apparatus. The veridiction regime is not (necessarily) a straightforward coercive regime; it may be organized around maximizing some aspect of a population's vitality, in which case critique may identify divergence among or the differential effects of a specific model, the population that it would apply to and enroll, and the values identified between them. Drawing heavily on Foucault's diagnosis of knowledge/power, critique in this register leans heavily on epistemological critique.

The analytic of operadiction points to another terrain of critique, namely ontological. As governmental technologies draw closer to the real, with ever more finely grained and immediately actionable information about the populations to which they apply, they leave vanishing little space for divergence between the governing routine and the governed. Changes in international legal practice have already been shrinking the spaces for divergence that are targeted by critique. Elsewhere, we have examined recent changes in the direction of institutional legal practices (eg, at the World Bank), changes which appear to privilege governmental rationalities exhibiting a fluid character, relatively untethered from representational rules and paradigms, valorizing resilience on the basis of immanent conditions. These legal-governance institutions have emphasized iterative and adaptive managerial techniques that are keyed to values associated with efficiency in uncertain circumstances, rather than to determine values meeting predefined conditions. Technological development have accelerated these managerial changes via legal-institutional deployment of algorithmic data technologies that operate on the basis of iterative pattern recognition processes. These machine-learning processes rely on correlational possibilities rather than causal connections: they do not describe causally-grounded deviation from a target value, or define causal conditions for, e.g., efficiency and growth, but produce unique values on the basis of correlational possibilities in an unstable present that the technology changes and recreates with every future that it forecloses. Its operation—whether at the level of international governance or at the quotidian level of online shopping recommender systems—materially affirms its value outputs in every act of their production. The population becomes indistinguishable from values immanent in the data out of which the population is continuously reconfigured for governance purposes. The population and the policy applied to it are iterated and enacted, instantaneously, over and over, by these emergent institutional-technological assemblages on the basis of immanent values.

Representational critique seems to offer little purchase in this particular governance context. The veridiction regime already strains ideology critique, insofar as the latter presupposes that governance is keyed to some undisclosed referent, whereas the former is keyed to the population – whatever else may be said of the menu of privileges and powers that it supports according to legible governmental values. But the remaining distance, between the truth regime and the object to which it applies, seems equally unable to account for the ontological work being done directly by and with information technologies. If the veridiction regime can be analyzed by means of genealogy, with historical examination to reveal the principles of intelligibility that inform the governmental position, the operadiction regime might collapse the genealogy-equivalent into a study of the pattern forming technology that is the algorithmic

assemblage. In many cases of AI, that pattern forming technology – like the patterns that it forms – is constantly changing and adapting on the basis of ongoing learning mechanisms. The aim of critique, then, cannot solely be directed at the distance between the governance routine and the values that are already present in its goal or model, but may better address the ways in which the governmental regime patterns new and emergent values on an ongoing, reiterative basis. Moreover, because the technology can be deployed to direct effect, shaping the information-rich environment in which it is deployed, critique might needs consider new and more immediate ways in which the governed are enrolled in the technologies of governance. Critique has consistently targeted the subject as the locus of governmental power, but in the fluid realm of operadiction, in which individuals are disaggregated into data points that are recombined into momentary patterns for risk analysis or consumer preference or traffic control, etc, it is no longer clear that the subject persists as the central or singular object of governance.

But though the values in these institutional-technological assemblages may be immanent in the data set, still we have suggested that they can be analyzed according to generic terms of information and temporality. These terms demonstrate that we still bring some reflexive tools to our research, that we still conduct our analysis from some point of critical distance beyond the plain of immanence, even as we attempt to comprehend the assemblage of a reflex technology, to use the language of Rouvroy and Knorr Cetina adopted in section 3. Moreover, these terms of information and temporality are also the objects of powerful economic interests. Thus our project does not pretend entirely to overthrow prior critical programs, and will continue to confront whether, how or to what degree elements prior critical programs still play a role here, for instance to illuminate the relationships between arguable economic determinants and the emergent programs with which they are entangled. Nonetheless, we think operadiction is a meaningful analytic necessary to understand the distinct workings of the sorts of governance regimes gestured to here.