EMMANUEL ALLOA (ED.)

# THIS OBSCURE THING CALLED TRANSPARENCY

## *Politics and Aesthetics of a Contemporary Metaphor*

LEUVEN UNIVERSITY PRESS

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## POLITICS AND AESTHETICS OF A CONTEMPORARY METAPHOR

EDITED BY EMMANUEL ALLOA

Leuven University Press

ISBN 978 94 6270 325 4
e-ISBN 978 94 6166 446 4
D/2022/1869/7
NUR:736
https://doi.org/10.11116/9789461664464
Cover design: Daniel Benneworth-Gray
Cover illustration: © Claudio Parmiggiani, *Teatro dell'arte e della guerra*, Teatro Farnese, Parma, 2006. Photo: Claudio Abate.
Lay-out: Coco Bookmedia, Amersfoort

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# 6. ALGORITHMIC TRANSPARENCY

## On the Rise of a New Normative Ideal and Its Silenced Performative Implications

Loup Cellard

*There is nothing innocent about making the invisible visible.*
Marilyn Strathern, "The Tyranny of Transparency"[1]

*What can be studied is always a relationship or an infinite regress of relationships. Never a "thing."*
Gregory Bateson, *Steps to an Ecology of Mind*[2]

### Introduction

The analysis of a paradox runs through this book. While conceptually, transparency refers to a *state*—for example, the material properties of a glass building—we try to apply it to things that are inherently *processual* and hence cannot be fixed. The normative demand for more 'algorithmic transparency' exemplifies this paradox. This expression conveys the belief and nurtures the illusion that algorithms have a utopian state—usually their source code—and a related point of view and access whereby they are fully understandable. Algorithms cannot be made transparent because they are distributed systems implemented through the movements of numerous entities and practices: the many layers of software needed to make them work; the circulation of data as inputs and outputs; the way operators of algorithms monitor and

tweak their functionalities; and finally, the recursive and automated learning whereby they adjust themselves to user behaviors. The present chapter investigates how, despite this paradox, organizations try to make algorithms graspable. Its contribution to this volume lies in the presentation of four provocative theses: first, that algorithmic transparency is not simply an ideal but a performance; second, that algorithmic transparency performances do not just reveal but transform; third, that algorithmic transparency is not evident and immediate but negotiated and scripted; and last but not least, that algorithmic transparency is not only a duty but a claim of exemplarity.

In the long list of things criticized for their lack of transparency, algorithms have recently risen to major prominence. While algorithms were long considered merely neutral mathematical procedures whose exact protocols had no direct effect on users, the general attitude has changed. In an increasingly automated world, our lives have been described as directly dependent on the 'power of algorithms', and some have claimed that algorithmic protocols could be the most efficient form of control, owing to their decentralized nature.[3] Such a gloomy picture, rather common in the public imagination today, has not, in the long history of algorithms, always been a given. In point of fact, the algorithm existed long before the digital age. Originally, algorithms referred to material manifestations of rules rooted in the mechanical art of writing and materialized in documents as early as Babylonian clay tablets, which dealt with everything from contemporary patent law and bureaucratic procedure rules to building instructions and cookbook recipes. This idea of the algorithm as a set of recipes or instructions is a decidedly premodern conception. Today, while still referring to a set of instructions aimed at solving certain problems, algorithms have changed status and come to designate complex cultural artifacts situated in overlapping narratives: the history of procedural rules,[4] material efficiency,[5] ordering,[6] automation, and more broadly, the cultural logic of digitization.[7] However, the modern meaning of the concept is best encapsulated in a definition derived from computer science: "An algorithm is any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values, as output".[8]

In contemporary public debates about the politics of technology, people have tended to situate algorithms within a genealogy of Orwellian and panoptic devices. Current discourses focus on how these systems implement forms of surveillance described as

disciplinary, distributed, non-explicit, and recursive.[9] Indeed, every day, we navigate situations where data about us, our cultural artifacts, and our society are computed, ordered, sorted, and oriented by algorithms, anticipated by predictive techniques, and enriched by optimization methods.[10] Our concerns about the power of algorithms are justified by many critical studies that rightly point to their roles as pervasive devices repetitively working toward the personalization of experience.[11] No doubt further contributing to widespread calls for transparency in algorithms were the specific controversies surrounding the use of private algorithms in judiciary tasks in the US in 2015–16—namely, the predictive policing system PredPol[12] and the COMPAS algorithm forecasting the risk of recidivism.[13] Such controversies around private algorithms helped publicize the term itself among citizens and in policy communities in the US, Europe, and elsewhere. Not a day goes by without new headlines blaming algorithms for being racist,[14] sexist,[15] misleading,[16] or monstrously pieced together.[17] This phenomenon is not limited to the Global North but can be observed on a global scale. In addition to affecting most European countries,[18] it has an impact on Chinese citizens subjected to local experiments with social credit systems,[19] Rwandans subjected to nascent AI technologies,[20] Australians seeing public services replaced by software,[21] and Chilean lands polluted by mining companies using targeted machine-learning techniques.[22]

Moreover, in the last five years, several influential public intellectuals have started to publish on this topic. American law professor Frank Pasquale's book *Black Box Society: The Secret Algorithms That Control Money and Information* was published in 2015.[23] That same year, French sociologist Dominique Cardon published *A quoi rêvent les algorithmes. Nos vies à l'heure des big data* (What algorithms dream of. Our lives in the age of big data).[24] Finally, in 2017, with his book *The Question Concerning Technology in China: An Essay in Cosmotechnics*, Chinese philosopher Yuk Hui produced an impressive philosophy of digital objects including algorithms.[25] The opacity of the technological 'black box', first legitimized and understood in cybernetic theories as a sign of technological success[26] (basically, an efficient technology is one that allows the user to disregard what happens between input and output), has reemerged in the last decade as a trope for the inscrutability and elusive nature of algorithms.[27]

In many fields, calls for making algorithms transparent are multiplying. But the way such demands are understood and

promoted varies according to the milieu—whether in public or private organizations, in social science researchers or engineering committees, and so on. Between 2015 and 2020, governments and big tech companies generated countless codes of conduct, guidelines, and other types of formalized recommendations aimed at mitigating the biases and errors of algorithms.[28] Demands from these organizations oscillated between a request for the opening of codes, an ethics of virtue constraining the work of data scientists, new deontological rules, and classical accountability mechanisms implemented with new rights to information, audits, and impact assessments. In 2016 media scholar Tarleton Gillepsie and anthropologist Nick Seaver published the first review of the critical literature, inaugurating the now burgeoning field of critical algorithm studies.[29] Empirically describing the algorithm as a socio-technical object that can only be stabilized through the careful practices of engineers, organizations, and users has been one of the key efforts aimed at countering a still common—and problematic—understanding of the algorithm as a digital object made up of nothing but lines of code. Since algorithms became a hot topic in the social sciences, new types of non-profit innovation centers have emerged at the intersection of research laboratories and think tanks to tackle the growing agential power of algorithms. The US, for instance, saw the creation of Data & Society in 2014 and the launch of the AI Now Institute in 2017; the UK saw the Ada Lovelace Institute set up in 2018; and Australia saw the Centre of Excellence for Automated Decision-Making and Society established in 2021. Since 2014, and in answer to a repeatedly voiced criticism about programmers being responsible for the creation of biased algorithms, a community of computer scientists has organized a yearly conference dedicated to fairness, accountability, and transparency in machine learning.[30] According to its members, transparency is something that can be engineered by creating easier ways to interpret computational models and implementing techniques that resolve bias and errors within these models.

If we simply take the case of Europe, public and private actors, researchers, journalists, and computer scientists are all working in a legislative context rather favorable to algorithmic transparency. As an example, in Table 1 I summarize the new rights to explanation of algorithmic decision-making as implemented in the European General Data Protection Regulation (GDPR) and in the French Lemaire Bill—the national legislation in Europe most constraining in this respect.[31]

This French Bill also sets the legislative stage for the fieldwork I carried out, which I will summarize in the second part of this chapter.

Table 1: Comparison of current, competing legal frameworks providing a Right to Explanation of algorithmic decision-making in Europe (GDPR) and France (Loi Lemaire).

| **Elements of the rights to explanation of algorithmic decision-making** | **Article 13 to 15 and 22 of European General Data Protection Regulation (GDPR). 04/05/16.**[32] | **Art. 2 of the French Digital Republic Bill (Loi Lemaire). 07/10/2016.** |
|---|---|---|
| **Who is concerned?** | Data subjects: identified and identifiable *natural persons*. | *Any persons*, both physical and legal entities (including private companies engaged in a public service mission). |
| **Types of algorithmic treatment?** | *Automated processing*, including profiling, that produces legal effects for the subjects or that affects them in a similarly significant way.[33] | *Any algorithmic treatment*, including semi-automated decision-making, that is the basis for an individual administrative decision. |
| **What can citizens claim?** | *Meaningful information about the logic involved*, as well as the significance and the envisaged consequences of such processing for the data subject. | Rules defining the algorithmic processing as well as the main characteristics of its implementation (including *how and when an algorithm participated in a given decision*). |

How to respond to the agential power of often biased algorithms? To clarify the stakes and give an overview of the current debates around algorithmic transparency, the first part of this chapter provides four pragmatic strategies available to organizations when technologically implementing algorithmic transparency: disclosing, surveilling, monitoring, and exposing algorithmic processes. The second part focuses on the main tool currently available to disclose how algorithms work: Freedom of Information Requests (FOI). My analysis is based on an ethnography of French public sector algorithms in the context of the French Lemaire Bill of 2016.[34] Most studies of transparency try to analyze the outcomes of transparency's implementation. But since they are only made after the fact, from the public's point of view, they cannot describe transparency *in the making*. Using ethnography, I was able to enter the spaces where transparency is framed and planned: the sites where everyday organizational efforts toward transparency are developed. Access to such sites and to the types of discussions that occur in the planning of transparency can shed light on how it is implemented to manage the (in)visibility of algorithms. As far as methodology is concerned, this fieldwork combines insights from critical organizational studies[35] with a systematic approach inspired by science and technology studies.[36] The last part is organized around the four provocative theses mentioned above and supported by ethnographic anecdotes. These critical assertions could help other researchers develop their studies and guide practitioners of algorithmic transparency in weighing the unexpected political implications of their actions.

## I. Algorithmic Transparency: Four Technological Strategies

In his survey of the extensive history of methods for achieving transparency, organizational theorist Ethan Bernstein identifies four strategies for its contemporary technological enactment.[37] The most well-known concerns acts of disclosure—that is, "the act of making new or previously secret information known" ("in other words, 'let me tell you about our work'").[38] Disclosure is a particular performance that constrains or intentionally leads those holding information to make it public.[39] The culture of disclosure has been institutionalized, for example, through freedom of information requests and consumer rights to be informed. Organizational theorist Mikkel Flyverbom has noted that disclosures are not neutral in the way they orient our

scrutiny: "all kinds of disclosures guide our attention and must be understood as managed visibilities that could be different".[40] New rights to information implemented by the GDPR and the Lemaire Bill enact means, constraints, and temporalities of disclosures about algorithms run by private and public organizations. Moreover, regulatory efforts to impose audits of algorithms as mandatory business practices are currently gaining prominence.[41]

The second classical mode of enabling transparency is through surveillance, understood as "close, constant, and comprehensive supervision" ("in other words, 'we're watching everything you do' or 'the few watching the many'").[42] Surveillance is identified as a coercive method of insidiously controlling individuals, and can be carried out by direct witnessing or complex data tracking.[43] Surveillance through data tracking stresses the affective dimension of transparency in our contemporary neoliberal context, especially insofar as it could be seen as an invasion of the citizen's privacy.[44] Relevant in this context is the belief that we are living in a "society of total transparency," as promoted by postmodernism,[45] science-fiction,[46] and cultural criticism.[47] While acts of disclosure are rather moderate and remain associated with the revelation of withheld information—they follow rules and procedures and are understood as a necessary advancement of democratic accountability—the strategies for countering regimes of mass surveillance are more radical. Such strategies involve counter-surveillance (sometimes also referred to as 'sous-veillance'), and consist of powerful methods created by hacktivists, researchers, and artists for 'tracking the trackers', but also involve reverse-engineered algorithms or tactics for obfuscating, and thus blocking or disrupting, the data tracking and computing of damaging algorithms.[48]

The third mode of transparency identified by Bernstein is monitoring, defined as "any non-hierarchical observation system that gathers information about an activity or task and makes it more widely available" ("In other words, 'let us all see your activity'").[49] Unlike surveillance, the results of monitoring are shared with the monitored, since the strategy is one of deterrence. While disclosing is an occasional event, monitoring is a more continuous and standardized process of information tracking and display. For example, the NGO Transparency International regularly monitors levels of corruption by country and by topic (e.g., private sector, humanitarian assistance, sport, etc.). Regarding algorithms, governments, civil society, and research communities have made serious calls to monitor platforms such as Facebook and YouTube for the way

they use algorithms to flag and report misinformation or other content that violates their terms of service and policies.[50]

The last mode of transparency described by Bernstein is process visibility. It is defined as the act of "providing visual information focused on the process or implementation of a workflow or set of activities" ("In other words, 'watch our workflow'").[51] While disclosure generally corresponds to material or data evidence suddenly being exposed in its raw and initial form, process visibility indicates an effort to retranslate this evidence into an explanation accessible to a broader audience. In this case, there is a broader awareness that a mere object-based *re*-presentation is not sufficient, and that an entire process needs to be rephrased in an edited and curated form. Of course, a process could also be surveilled and monitored. An innovative form of making a process visible could be to orchestrate a mediation between the designers, owners, regulators, and users of an algorithm. In 2018 researcher Kate Crawford and data investigator Vladan Joler created an impressive information visualization of the home assistant Amazon Echo and presented its 'anatomical map' composed of algorithms, human labor, data, and planetary resources—from mineral extraction to cloud computing services to workers refining speech recognition.[52]

The four modes—disclosing, surveilling, monitoring, and exposing an algorithmic process—can be classified into two distinct paradigms: pedagogical objectives, and the desire to reduce an information asymmetry between stakeholders (owing to disclosure, process visibility, and monitoring) or the attempt to prevent, control, or condemn undesirable behaviors (often using surveillance or monitoring). Of course, these paradigms and modes can be mixed. Although all four modes can be considered from the point of view of general strategies and visions, the quality, opportunities, and constraints of devices—that is, paper documents, visual forms of knowledge production, interfaces, and so on—are the core elements that orient citizens' attention, abilities, and care toward scrutiny.

## II. Four Provocative Theses about the Politics of Algorithmic Transparency

In this second part, as I mentioned previously, I would like to establish the four theses. Right from the start, however, I should point out that these four theses are not abstract speculations, but insights grounded

in empirical study. Indeed, this section draws on an ethnography of algorithmic transparency discourses in the French public sector. Carried out between March and October 2018, it studied the interministerial mission in charge of open data policies, Etalab, and included meetings with regulatory bodies and citizens affected by algorithmic decision-making.[53] Etalab is the instrument that has publicized and fostered the digital transformation of the French State through innovative practices such as the resources of data science and algorithmic simulators,[54] incentives to open up state data and create digital commons,[55] promises of State platformization, and a provocative hacking spirit.[56] It is the service that launched the legislative effort toward a new right to explanation of algorithmic decision-making: a powerful device and part of the Lemaire Bill presented in the introduction (see Table 1, right column).

Furthermore, Etalab seeks to position itself at the crossroads of the executive power, the ministries, regulators, the Open Government community, and citizens. It is therefore an operator capable of pushing for change toward greater transparency, but also an agent at the service of administrations and under the influence of the executive power.

### *1. Algorithmic transparency is not simply an ideal but a performance*

Transparency has often been described as an ideal, a value, or a virtue.[57] Such an assessment, however, limits our understanding of the complex socio-technical practices occasioned by its implementation through policies and devices. In describing how transparency ideals are performed in practice, we can raise the issue of whether the normative claims of transparency are matched by its organizational and technological implementations. My understanding of 'performance' here is rooted in the dramaturgical analysis of organizational practices derived from Erving Goffman.[58] Building on this, sociologist Fabian Muniesa defines the theatrical performativity grounded in Goffman's works as "the idea of practice as ongoing accomplishment, as acting and staging in an almost explicitly theatrical sense—or at least one that considers the practical and situated features of sense-making in ordinary life".[59] Following Muniesa and Goffman, two key ideas emerge. First, transparency is constructed through specific situational performances—behind the scenes, it is constructed through practices

that negotiate with its normative value. Second, on the front-end, transparency performances are always a *mise-en-scène*, and thus, disclosure is the result of a curated event.

Definitions of transparency are multiple[60] and since public policy actors' visions of the concept are rarely ever aligned,[61] it may be appropriate, rather, to study the practical consequences of its multiple occurrences. For example, since Etalab originated as a service meant to 'open up' data from public organizations, the task force tends to conflate transparency with 'openness'.[62] The problem with this confusion lies in the fact that openness only conveys a sense of access while transparency must guarantee a form of understanding of what is disclosed. In a seminal article on the modern imaginary of transparency, philosopher Emmanuel Alloa explains this problem eloquently: "What is at stake is whether transparency can claim to stand for the openness it purports to bring about. […] More importantly, however, transparency as openness faces an ontological contradiction: is transparency constative or transformative? Does it register a fact or does it elicit change?"[63]

Ultimately, since the definition of transparency is vague, and since what constitutes its value as an ideal is fleeting, what is implemented and branded in its name remains unclear. The study of public performances of transparency is instrumental in providing reliable evidence for pragmatic improvements and further investigations. While many governmental and academic discussions about the agential power of algorithms have stirred potentially endless philosophical debates about the 'true' meaning of transparency, my own view is that reformist efforts to cope with algorithmic harms would not necessarily be facilitated by more detailed definitions. Instead, they would benefit from a richer understanding of how transparency is implemented in all its performative aspects.

Rather than seeking to resolve the inherent limitations of prescriptive codes of conduct or ethical guidelines, in situating algorithmic transparency as a performance, I am stressing the contingencies of its conduct as a practice—to name a few: achieving transparency is a difficult search for explicitness; negotiations of transparency may fail; the act of disclosing is full of improvisations; expert audiences often notice the attempts to stage disclosed information; and last but not least, the transformative effects of disclosures are difficult to anticipate and evaluate. These various contingencies were quite evident to me during my fieldwork. Indeed, in a context where algorithms could be understood in different ways, the work of explicitness is challenging and leads actors

to stage algorithms through various forms. My specific case study, the housing tax algorithm, has been alternatively staged as a simple form of calculus, a large-scale State infrastructure, and a mundane fiscal tool. In short, the object of transparency is not fixed a priori but performed through iterations. The different stagings of this algorithm oriented the quality and quantity of what was disclosed. Hence, methodologically, being attentive to how actors 'perform' algorithms sheds light on how to 'evaluate' their efforts. The transparency of the housing tax algorithm was staged and negotiated in a meeting I attended between Etalab and the Ministry of Public Finance. Drawing on their legal and engineering expertise, lawyers and open data managers improvised a way to script disclosures so that key controversial information would remain unseen by lay audiences. There is no transparency without the performances of experts occurring in the background; through practical acts they secure an authority and legitimacy, and their knowledge, ignorance, and tactics of persuasion are crucial for setting disclosure. Then, in the foreground, transparency performances presented to the public select, divide, and curate what can be seen. In being performed, disclosures pacified debates, but it remains difficult to say whether they truly enhanced accountability.

In short, studying transparency as a performance raises several questions about its making and its ambiguous effects, whereas approaching it as an ideal confronts us with problems of adequacy, leaving us under-equipped to navigate the gap between the meaning of an ideal and its errant and unstable practice. Moreover, once we analyze transparency performances, we can investigate not just the configuration of what will be made public but also the major transformations to which the environment is subject.

## *2. Algorithmic transparency performances do not just reveal but transform*

Beyond communicating new knowledge to audiences, transparency is transforming actors, issues, and more generally, the field in which its performance occurs. Indeed, in witnessing the elaborate staging of transparency by Etalab, I recognized how the task force gained a new position, legitimacy, expertise, and sense of pride as a public policy actor capable of managing algorithmic issues through innovative experimentation (i.e., collaborative workshops involving civil society and

a simulator of the housing tax). While up to that point, this service had mainly served to manage the availability of State-produced data, its new mission became that of making State algorithms 'transparent'. In terms of symbolic capital, within the French context, Etalab has since been credited with initiating a discussion about algorithmic transparency. Indeed, in June 2018, three months after French president Emmanuel Macron's interview in *Wired* magazine and the announcement of the French AI strategy, the Interministerial Directorate for Public Transformation (DITP) and the Interministerial Directorate for Digital and State Information and Communication Systems (DINSIC) launched a call for expressions of interest in experimenting with artificial intelligence in public services (AMI IA).[64] As part of the DINSIC, Etalab was tasked with organizing the call. Five months later, after reviewing fifty-two applications, the Minister of Digital Affairs announced six winners. As it happened, what was actually promoted under the banner of an increase in algorithmic transparency was the algorithmicizing of the French State; the normative asset served as a justification for allaying critical concerns, but also furthered the implementation of long-planned technological policies.

Making something transparent is thus a far cry from simply uncovering a state of things; rather, it stands for a 'making' in its own right, which never leaves untouched the things made transparent or the actors in such a transformative process. Here, performances of transparency are transformative not simply owing to their curated quality but because publicity and visibility have the political power to set new priorities and determine new legitimacies. Unraveling the transformative nature of transparency is important because, as I have suggested in the case of Etalab, the reorganizations it entails often end up reinforcing the organizational agenda of the actors in the field. In becoming an actor of algorithmic transparency, Etalab gained a new honorable status as a task force committed to the democratic virtue of transparency. As Marilyn Strathern beautifully summarizes: "there is nothing innocent about making the invisible visible".[65] In short, transformations generated by transparency initiatives can double as strategies where transparency is a Trojan horse for developing and managing organizations.

Mapping and interrogating the transformations prompted by a transparency initiative (re)raises questions about the technological conduct of State organizations,[66] the role of infomediaries and task forces,[67] and the uses of machinic metaphors—such as 'software', 'platform', and 'system'—as devices triggering State reorganizations.[68]

If transparency is transformative, this also means that transparency initiatives are not only a reactive response—a staging effort that defensively responds to previous or anticipates future accountability failures[69]—but also a proactive practice seeking to change objectives and modes of action.

### *3. Algorithmic transparency is not evident and immediate but negotiated and scripted*

Transparency is generally thought of as facilitating access to knowledge and conceived of as a form of unrestricted disclosure fed by an information liberalism, which posits that nothing relevant should be kept out of sight.[70] This simple vision depicts transparency as a direct and immediate act that puts the viewer in touch with a given, with the thing itself. By contrast, a performative approach stresses the procedural, theatrical, and manufactured aspect of transparency: transparency is made; it is never a given. In my fieldwork I witnessed how making things public is not an easy task and requires a considerable number of discussions, anticipations, and compromises. More precisely, I argued that negotiation and scripting were two specific performative modes used by actors to organize the practice of transparency as something feasible and useful in view of their organizational agendas.

Negotiations between the Ministry of Public Finance and Etalab about disclosing the housing tax algorithm were centered on the temporality and quantity of disclosures. When should the key information of this tax policy be explained (as general information for all citizens or only when a citizen requests it)? And how much data should be made available? Unsurprisingly, the two teams did not agree on what should be made public and how. Once more, what took place were negotiations about the scripting of transparency, in a way that anticipated events, and about the permissibility of covering up certain organizational realities. In other words, what was negotiated in this meeting was the handling of a selection process, distinguishing between what should be made public and what should be protected. While transparency promises unrestricted disclosure about decision-making procedures, it does not disclose how the decisions about its own selection procedures come into being. In other words, the negotiation performance itself is passed over in silence. Being present at the meetings where such selection procedures were established allowed me to understand that by feigning ignorance

of the Lemaire Bill, the Ministry of Public Finance was performing a script, and was already orienting the course of negotiations. The Ministry of Public Finance's blind eye toward algorithmic transparency requirements (disregarding citizen rights and the moral obligations binding public organizations was an attempt to evade the practice of transparency) shows how that there are different possible ways to script negotiations about the depth of algorithmic transparency and ways to anticipate their conduct.

Describing the negotiations and scriptings of transparency can facilitate further investigations into the objects and techniques through which arbitrations are conducted: possibilities offered by legal and technological devices; the efficiency and authority of certain expertise in orienting discussions; the exploitation of ambiguities in citizen demands; and, finally, the use of time to speed up or slow down the pace of disclosures. By parting with the sublime vision of transparency as a straightforward communication of information, we can foreground the dialectical nature of transparency: the fact that its performance inevitably leads to showcasing certain things to the detriment of others.

## *4. Algorithmic transparency is not only a duty but a claim of exemplarity*

Transparency was long hailed as a normative duty that automatically entailed an increased accountability. By contrast, I want to stress the idea that transparency by no means has such immediate effects. Indeed, when Etalab and the Ministry of Public Finance realized that full accountability for the housing tax algorithm was impossible, they set the boundaries of what should be made public and disclosed only what could be easily formatted. While they released the source code of the housing tax algorithm along with documentation of its calculus, they did not offer an individualized or in-depth account of how the algorithm operates. Unlike the principle of transparency, the principle of accountability requires justification; publicly disclosing lines of code hardly constitutes an argumentative explanation. The Lemaire Bill proves once more that, as an objectified, abstract, and decontextualized disclosure,[71] this kind of transparency gives no account of algorithmic procedures.

When the commitment to accountability is forgotten or impeded, this signals that the relation between transparency and accountability

is no longer viable. The disconnection between these two notions is crucial if we are to adequately evaluate generalized theories of change of transparency protocols, which often assume that transparency always reinforces accountability.

Specifying the result of this disconnection is a first step in inquiring into the transformative power of transparency. When, as was the case in my fieldwork, sanctions for disregarding the duty of accountability are low, it opens a wide field for agents to discursively brand their performances. The rhetoric of exemplarity gave Etalab and the Ministry of a Public Finance a fresh impetus and a persuasive concept for claiming to citizens that transparency had indeed been achieved.

The circulation of the exemplary narrative helps draw attention away from the pursuit of a full accountability using different resources and techniques. In a press release issued by the Ministry of Public Finance, this rhetoric served as part of a *dispositif* of visibility management aimed at backstaging controversial information. This document claimed to position DGFIP as a 'forerunner' and 'pioneering' organization.[72] Here, trademarked exemplarity attracts attention and blocks the capacity to scrutinize. The housing tax simulator created by Etalab—an online dashboard replicating the key variables of the housing tax algorithm—was seen as a seductive and exemplary tool because of its interactive quality and the expectation of personalized explanations entailed by its use. In the end, managers of Etalab and the Ministry of Public Finance showcased their moral exemplarity on a web TV show, thus reinforcing their heroic status, whereby they seduced audiences through a dramaturgy of exemplarity that positioned transparency as an ideal or virtue. At this event, a representative of the Ministry of Public Finance presented algorithmic transparency as a value in the "spirit" of the organization, an "obsession to be clear", and a pride in having "worked hard with Etalab".

While Etalab and the Ministry of Public Finance could have been more critical about the limitations of transparency devices and more cynical about their attempts to limit disclosure, they preferred to see the practice of transparency as a means of fostering experimentation (i.e., by developing a simulator). Philosopher of science Ian Hacking once stated that "objectivity is not a virtue: it is the proclaimed absence of this or that vice".[73] Building from there, I would say that algorithmic transparency is not a virtue; it is a proclaimed exemplarity that conceals the vice of nurturing secrecy behind a commitment to innovation.

## Conclusion: Living with the Algorithmic Drama

How do we cope with the growing power and damaging behavior of algorithms? I started off by discussing the recent rise of the demand for more algorithmic transparency and presented four types of strategies used by organizations for implementing algorithmic transparency. All four strategies take transparency to be ideologically neutral and to stand for an unrestrictedly positive value. In response, I presented four provocative and, to a certain extent, counterintuitive theses that move away from transparency as a neutral and given state. By insisting on transparency's status as produced, technologically and discursively manufactured, and theatrically staged through social scripts and discursive signifiers, I emphasized its performative dimension. At the same time, by fleshing out transparency as the result of an active staging process, I do not mean to imply that it is per se delusional or should be given up altogether. With the expression 'algorithmic drama', sociologist Malte Ziewitz came to describe our current paradoxical situation: the opacity of algorithms is reified as a sign of their power and influence while, at the same time, demands for more transparency undermine the strengths and sense of sublime rationality attached to these computational systems.[74] What we are left with is that algorithms can never be made thoroughly transparent. In the face of this drama, should we laugh or cry? Essentially, my claim is that the response to the society of constant algorithmic testing is a society of theatrical demonstrations of transparency. We must respond to one drama another: one kind of staging should be met with a counter-staging.

## Notes

1 Marilyn Strathern, "The Tyranny of Transparency," *British Educational Research Journal* 26 (3) (2000), 309–21: 309.

2 Gregory Bateson, *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*, Chicago: University of Chicago Press, 1972, 246.

3 Massimo Mazzotti, "Algorithmic Life," *Los Angeles Review of Books*, 22/01/2017, https://www.lareviewofbooks.org/article/algorithmic-life (accessed 27/09/2021); Alexander Galloway, *Protocol: How Control Exists After Decentralization*, Cambridge MA: MIT Press, 2004.

4 Lorraine Daston, "Mechanical Rules before Machines: Rules and Paradigms," Roosevelt House Public Policy Institute, Hunter College, Columbia University, (2019), https://scienceandsociety.columbia.edu/events/lorraine-daston-mechanical-rules-machines-rules-and-paradigms (accessed 28/09/2020).

5 Craig Robertson, *The Filing Cabinet: A Vertical History of Information*, Minneapolis: University of Minnesota Press, 2021.

6 Bernhard Rieder, *Engines of Order: A Mechanology of Algorithmic Techniques*, Amsterdam: Amsterdam University Press, 2020.

7 David Golumbia, *The Cultural Logic of Computation*, Cambridge, MA: Harvard University Press, 2009. See Seb Franklin, *Control: Digitality as Cultural Logic*, Cambridge, MA: MIT Press, 2015.

8 Thomas Cormen, Charles Leiserson, Ronald Rivest, and Clifford Stein, *Introduction to Algorithms, Third Edition*, Cambridge, MA: MIT Press, 2009, 5.

9 Alex Gekker and Samuel Hind, "Infrastructural Surveillance," *New Media & Society* 22 (8) (2019), 1414–36.

10 Marion Fourcade and Kieran Healy, "Classification Situations: Life-Chances in the Neoliberal Era," *Accounting, Organizations and Society* 38 (8) (2013), 559–72; Karen Yeung, "'Hypernudge': Big Data as a Mode of Regulation by Design," *Information, Communication & Society* 2 (2016), 1–19; Louise Amoore, *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others*, Durham: Duke University Press, 2020.

11 Celia Lury and Sophie Day, "Algorithmic Personalization as a Mode of Individuation," *Theory, Culture & Society* 36 (2) (2019), 17–37.

12 Bilel Benbouzid, "Values and Consequences in Predictive Machine Evaluation: A Sociology of Predictive Policing," *Science & Technology Studies* 32 (4) (2019), 119–36.

13 Sarah Brayne and Angèle Christin, "Technologies of Crime Prediction: The Reception of Algorithms in Policing and Criminal Courts," *Social Problems* 68 (3) (2021), 1–17.

14 Thao Phan and Scott Wark, "What Personalisation Can Do for *You*! Or, How to Do Racial Profiling Without 'Race,'" *Culture Machine* 20 (2021).

15 Alison Adam, *Artificial Knowing: Gender and the Thinking Machine*, London, UK: Routledge, 1998; Diana Forsythe, *Studying Those Who Study Us: An Anthropologist in the World of Artificial Intelligence*, Stanford: Stanford University Press, 2002.

16 Axel Meunier, Donato Ricci, Dominique Cardon, and Maxime Crépel, "Les glitchs, ces moments où les algorithmes tremblent," *Techniques & Culture* 72 (2019), 200–203.

17 Lucy Suchman, "Frankenstein's Problem," *Working Conference on Information Systems and Organizations (IS&O)*, December 2018, San Francisco, CA, United States, 13–18.

18 See the annual reports of the NGO Algorithm Watch, https://automatingsociety.algorithmwatch.org (accessed 27/09/2021).

19 Jonathan Bach, "The Red and the Black: China's Social Credit Experiment as a Total Test Environment," *British Journal of Sociology* 71 (3) (2020), 489–502.

20 See for example the work of the NGO The Future Society, https://thefuturesociety.org/2020/08/31/development-of-rwandas-national-artificial-intelligence-policy (accessed 27/09/2021).

21 Gillian Terzis, "Austerity Is an Algorithm," *Logic Mag* 3 (2017).

22 Orit Halpern, "Planetary Intelligence," in *The Cultural Life of Machine Learning*, ed. Jonathan Roberge and Michael Castelle, London: Palgrave Macmillan, 2020.

23 Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information*, Cambridge, MA: Harvard University Press, 2015.

24 Dominique Cardon, *À quoi rêvent les algorithmes. Nos vies à l'heure des big data*, Paris: Seuil, 2015.

25 Yuk Hui, *The Question Concerning Technology in China: An Essay in Cosmotechnics*, Falmouth, UK: Urbanomic/MIT Press, 2017.

26 For an analysis and reformulation of the problem see Bruno Latour, "The Prince for Machines as Well as for Machinations," in *Technology and Social Change*, ed. Brian Elliott, Edinburgh: Edinburgh University Press, 1988, 20–43.

27 Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information*, Cambridge, MA: Harvard University Press, 2015.

28 For examples, see https://inventory.algorithmwatch.org (accessed 29/09/2021).

29 See https://socialmediacollective.org/reading-lists/critical-algorithm-studies (accessed 27/09/2021).

30 See https://www.fatml.org/ and https://facctconference.org (accessed 27/09/2021).

31 Loup Cellard, "Les demandes citoyennes de transparence au sujet des algorithmes publics," Research note for Etalab (2019), http://www.loupcellard.com/wp-content/uploads/2019/07/cellard_note_algo_public.pdf (accessed 27/09/2021).

32 Reuben Binns and Michael Veale, "Is That Your Final Decision? Multi-Stage Profiling, Selective Effects, and Article 22 of the GDPR," *International Data Privacy Law*, forthcoming, (2021).

33 See Recital 71 of the GDPR: "In any case, such processing should be subject to suitable safeguards, which should include specific information to the data subject and the right to obtain human intervention, to express his or her point of view, to obtain an explanation of the decision reached after such assessment and to challenge the decision. Such measure should not concern a child." Source: https://gdpr-text.com/fr/read/recital-71/ (accessed 27/01/2021).

34 Cellard, Les demandes citoyennes.

35 Oana Albu, *Transparency in Organizing: A Performative Approach*, PhD dissertation, Copenhagen Business School, 2014; Mikkel Flyverbom, *The Digital Prism: Transparency and Managed Visibilities in a Datafied World*, Cambridge: Cambridge University Press, 2019.

36 Andrew Barry, "Transparency as a Political Device," in *Débordements: Mélanges offerts à Michel Callon, Madeleine Akrich, Yannick Barthe, Fabian Muniesa & Philippe Mustar*, Paris: Presses des Mines, 2010, 21–39; Penny Harvey, Madeleine Reeves, and Evelyn Ruppert, "Anticipating Failure," *Journal of Cultural Economy* 6 (3) (2013), 294–312.

37 Ethan Bernstein, "Making Transparency Transparent: The Evolution of Observation in Management Theory," *Academy of Management Annals* 11 (1) (2016), 217–66.

38 Bernstein, Making Transparency, 218.

39 Michael Schudson, *The Rise of the Right to Know: Politics and the Culture of Transparency*, Cambridge, MA: Harvard University Press, 2015.

40 Mikkel Flyverbom, "Disclosing and Concealing: Internet Governance, Information Control and the Management of Visibility," *Internet Policy Review* 5 (3) (2016), 1–15: 1.

41 Lena Ulbricht and Karen Yeung, "Algorithmic Regulation: A Maturing Concept for Investigating Regulation *of* and *through* Algorithms," *Regulation & Governance* (2021), 1–20.

42 Bernstein, Making Transparency, 218.

43 Phil Agre, "Surveillance and Capture: Two Models of Privacy," *The Information Society* 10 (2) (1994), 101–27; Ifeoma Ajunwa, Kate Crawford & Jason Schultz, "Limitless Worker Surveillance," *California Law Review* 105 (3) (2018), 101–42.

44 Ethan Bernstein, "The Transparency Paradox: A Role for Privacy in Organizational Learning and Operational Control," *Administrative Science Quarterly* 57 (2) (2012), 181–216.

45 Jean Baudrillard, *La transparence du mal: essai sur les phénomènes extrêmes*, Paris: Editions Galilée, 1990; Gianni Vattimo, *The Transparent Society*, Cambridge, UK: Polity Press, 1992.

46 David Brin, *The Transparent Society*, Reading, MA: Basic Books, 1998.
47 Byung-Chul Han, *The Transparency Society*, Stanford: Stanford University Press, 2015.
48 Brett Neilson, "The Reverse of Engineering," *South Atlantic Quarterly* 119 (1) (2020), 75–93.
49 Bernstein, Making Transparency, 218.
50 Tarleton Gillespie, "Content Moderation, AI, and the Question of Scale," *Big Data & Society* (2020).
51 Bernstein, Making Transparency, 218.
52 See https://anatomyof.ai (accessed 27/09/2021).
53 Loup Cellard, *Theatres of Algorithmic Transparency: A Post-digital Ethnography*, PhD Dissertation, University of Warwick, UK, 2020.
54 Sébastien Shulz, "Un logiciel libre pour lutter contre l'opacité du système sociofiscal. Sociologie d'une mobilisation hétérogène aux marges de l'Etat," *Revue française de science politique* 69 (5–6) (2019), 845–68.
55 Sarah Labelle, *Médiations & pouvoirs de l'agir ingénieur. Mythes et infrastructures des politiques de données*, Habilitation à diriger des recherches en Sciences de l'Information et de la Communication (71st section), Université Paris Est, 2020.
56 Marie Alauzen, *Plis et replis de l'État plateforme. Enquête sur la modernisation des services publics en France*, PhD Dissertation, Paris: Paris Sciences et Lettres (ComUE), 2019.
57 Schudson, Right to Know, 22–23.
58 Erving Goffman, *The Presentation of Self in Everyday Life*, New York: Doubleday, 1959.
59 Fabian Muniesa, *The Provoked Economy: Economic Reality and the Performative Turn*, London: Routledge, 2014, 11.
60 Emmanuel Alloa, "Transparency: A Magic Concept of Modernity," in *Transparency, Society and Subjectivity: Critical* Perspectives, ed. Emmanuel Alloa and Dieter Thomä, London: Palgrave Macmillan, 2018, 31–32.
61 Anna Jobin, Marcello Ienca, and Effy Vayena, "The Global Landscape of AI Ethics Guidelines," *Nature Machine Intelligence* 1 (1) (2019), 389–99.
62 Commitment 16 claims to "promote the opening of computational models and State simulators." See http://suivi-gouvernement-ouvert.etalab.gouv.fr/fr/Engagement16.html (accessed: 18/06/2019).
63 Alloa, A Magic Concept, 41.
64 See https://www.modernisation.gouv.fr/outils-et-methodes-pour-transformer/appel-a-manifestationdinteret-intelligence-artificielle-annonce-des-laureats (accessed 17/08/2020).
65 Strathern, Tyranny of Transparency, 309.

66 Lina Dencik and Anne Kaun, "Datafication and the Welfare State," *Global Perspectives* 1 (1) (2020), 1–20.
67 Becky Carter, "Infomediaries and accountability," Birmingham, UK: GSDRC (2016). See https://gsdrc.org/publications/infomediaries-and-accountability/ (accessed 26/09/2020).
68 Yaron Ezrahi, "The Theatrics and Mechanics of Action: The Theater and the Machine as Political Metaphors," *Social Research* 62 (2) (1995), 299–322.
69 Harvey, Reeves, and Ruppert, Anticipating Failure.
70 Haridimos Tsoukas, "The Tyranny of Light," *Futures* 29 (9) (November 1997), 827–43.
71 Tsoukas, Tyranny of Light.
72 I am not linking this document to avoid any reidentification of persons.
73 Ian Hacking, "Let's Not Talk About Objectivity" in *Objectivity in Science,* ed. Flavia Padovani, Alan Richardson, and Jonathan Tsou, Berlin: Springer, 2015, 26.
74 Malte Ziewitz, "Governing Algorithms: Myth, Mess, and Methods," *Science, Technology, & Human Values* 41 (1) (2015), 3–16.

## Bibliography

Adam, Alison, *Artificial Knowing: Gender and the Thinking Machine*, London: Routledge, 1998.

Agre, Phil, "Surveillance and Capture: Two Models of Privacy," *The Information Society* 10 (2) (1994), 101–27.

Ajunwa, Ifeoma, Kate Crawford, and Jason Schultz, "Limitless Worker Surveillance," *California Law Review* 105 (3) (2018), 101–42.

Alauzen, Marie, *Plis et replis de l'État plateforme. Enquête sur la modernisation des services publics en France*, PhD Dissertation, Paris: Paris Sciences et Lettres (ComUE), 2019.

Albu, Oana, *Transparency in Organizing: A Performative Approach*, PhD dissertation, Copenhagen Business School, 2014.

Alloa, Emmanuel, "Transparency: A Magic Concept of Modernity," in *Transparency, Society and Subjectivity: Critical Perspectives*, ed. Emmanuel Alloa and Dieter Thomä, London: Palgrave Macmillan, 2018, 21–55.

Amoore, Louise, *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others*, Durham, NC: Duke University Press, 2020.

Bach, Jonathan, "The Red and the Black: China's Social Credit Experiment as a Total Test Environment," *British Journal of Sociology* 71 (3) (2020), 489–502.

Bateson, Gregory, *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*, Chicago: University of Chicago Press, 1972.

Barry, Andrew, "Transparency as a Political Device," in *Débordements: Mélanges offerts à Michel Callon, Madeleine Akrich, Yannick Barthe, Fabian Muniesa & Philippe Mustar*, Paris: Presses des Mines, 2010, 21–39.

Baudrillard, Jean, *La transparence du mal: essai sur les phénomènes extrêmes*, Paris: Editions Galilée, 1990.

Benbouzid, Bilel, "Values and Consequences in Predictive Machine Evaluation: A Sociology of Predictive Policing," *Science & Technology Studies* 32 (4) (2019), 119–36.

Bernstein, Ethan, "Making Transparency Transparent: The Evolution of Observation in Management Theory," *Academy of Management Annals* 11 (1) (2016), 217–66.

Bernstein, Ethan, "The Transparency Paradox: A Role for Privacy in Organizational Learning and Operational Control," *Administrative Science Quarterly* 57 (2) (2012), 181–216.

Binns, Reuben, and Michael Veale, "Is That Your Final Decision? Multi-Stage Profiling, Selective Effects, and Article 22 of the GDPR," *International Data Privacy Law*, forthcoming, (2021).

Brayne, Sarah and Angèle Christin, "Technologies of Crime Prediction: The Reception of Algorithms in Policing and Criminal Courts," *Social Problems* 68 (3) (2021), 1–17.

Brin, David, *The Transparent Society*, Reading, MA: Basic Books, 1998.

Cardon, Dominique, *À quoi rêvent les algorithmes. Nos vies à l'heure des big data*, Paris: Editions du Seuil, 2015.

Carter, Becky, "Infomediaries and accountability," Birmingham, UK: GSDRC (2016), https://gsdrc.org/publications/infomediaries-and-accountability/ (accessed 26/09/2020).

Cellard, Loup, "Les demandes citoyennes de transparence au sujet des algorithmes publics," Research note for Etalab (2019), http://www.loupcellard.com/wp-content/uploads/2019/07/cellard_note_algo_public.pdf (accessed 27/09/2021).

Cellard, Loup, *Theatres of Algorithmic Transparency: A Post-digital Ethnography*, PhD Dissertation, University of Warwick, UK, 2020.

Cormen, Thomas, Charles Leiserson, Ronald Rivest, and Clifford Stein, *Introduction to Algorithms, Third Edition*, Cambridge, MA: MIT Press, 2009.

Daston, Lorraine, "Mechanical Rules before Machines: Rules and Paradigms," Roosevelt House Public Policy Institute, Hunter College, Columbia University,

(2019), https://scienceandsociety.columbia.edu/events/lorraine-daston-mechanical-rules-machines-rules-and-paradigms (accessed 28/09/2020).

Dencik, Lina, and Anne Kaun, "Datafication and the Welfare State," *Global Perspectives* 1 (1) (2020), 1–20.

Ezrahi, Yaron, "The Theatrics and Mechanics of Action: The Theater and the Machine as Political Metaphors," *Social Research* 62 (2) (1995), 299–322.

Forsythe, Diana, *Studying Those Who Study Us: An Anthropologist in the World of Artificial Intelligence*, Stanford: Stanford University Press, 2002.

Fourcade, Marion, and Kieran Healy, "Classification Situations: Life-Chances in the Neoliberal Era," *Accounting, Organizations and Society* 38 (8) (2013), 559–72.

Flyverbom, Mikkel, "Disclosing and Concealing: Internet Governance, Information Control and the Management of Visibility," *Internet Policy Review* 5 (3) (2016), 1–15.

Flyverbom, Mikkel, *The Digital Prism: Transparency and Managed Visibilities in a Datafied World*, Cambridge: Cambridge University Press, 2019.

Franklin, Seb, *Control: Digitality as Cultural Logic,* Cambridge, MA: MIT Press, 2015.

Galloway, Alexander, *Protocol: How Control Exists after Decentralization*, Cambridge, MA: MIT Press, 2004.

Gekker, Alex, and Samuel Hind, "Infrastructural Surveillance," *New Media & Society* 22 (8) (2019), 1414–36.

Gillespie, Tarleton, "Content Moderation, AI, and the Question of Scale," *Big Data & Society* (2020).

Goffman, Erving, *The Presentation of Self in Everyday Life*, New York: Doubleday, 1959.

Golumbia, David, *The Cultural Logic of Computation*, Cambridge, MA: Harvard University Press, 2009.

Hacking, Ian, "Let's Not Talk About Objectivity," in *Objectivity in Science*, ed. Flavia Padovani, Alan Richardson, and Jonathan Tsou, Berlin: Springer, 2015, 21–33.

Halpern, Orit, "Planetary Intelligence," in *The Cultural Life of Machine Learning*, ed. Jonathan Roberge and Michael Castelle, London: Palgrave Macmillan, 2020.

Han, Byung-Chul, *The Transparency Society*, Stanford: Stanford University Press, 2015.

Harvey, Penny, Madeleine Reeves, and Evelyn Ruppert, "Anticipating Failure," *Journal of Cultural Economy*, 6 (3) (2013), 294–312.

Hui, Yuk, *The Question Concerning Technology in China: An Essay in Cosmotechnics*, Falmouth, UK: Urbanomic/MIT Press, 2017.

Jobin, Anna, Marcello Ienca, and Effy Vayena, "The Global Landscape of AI Ethics Guidelines," *Nature Machine Intelligence* 1 (1) (2019), 389–99.

Labelle, Sarah, *Médiations & pouvoirs de l'agir ingénieur. Mythes et infrastructures des politiques de données*, Habilitation à diriger des recherches en Sciences de l'Information et de la Communication (71st section), Université Paris Est, 2020.

Latour, Bruno, "The Prince for Machines as Well as for Machinations," in *Technology and Social Change*, ed. Brian Elliott, Edinburgh, UK: Edinburgh University Press, 1988, 20–43.

Lury, Celia, and Sophie Day, "Algorithmic Personalization as a Mode of Individuation," *Theory, Culture & Society* 36 (2) (2019), 17–37.

Mazzotti, Massimo, "Algorithmic Life," *Los Angeles Review of Books*, 22/01/2017, https://www.lareviewofbooks.org/article/algorithmic-life (accessed 27/09/2021).

Meunier, Axel, Donato Ricci, Dominique Cardon, and Maxime Crépel, "Les glitchs, ces moments où les algorithmes tremblent," *Techniques & Culture* 72 (2019), 200–203.

Muniesa, Fabian, "Is a Stock Exchange a Computer Solution? Explicitness, Algorithms and the Arizona Stock Exchange," *International Journal of Actor-Network Theory and Technological Innovation* 3 (1) (2011), 1–15.

Muniesa, Fabian, *The Provoked Economy: Economic Reality and the Performative Turn*, London: Routledge, 2014.

Neilson, Brett, "The Reverse of Engineering," *South Atlantic Quarterly* 119 (1) (2020), 75–93.

Pasquale, Frank, *The Black Box Society: The Secret Algorithms That Control Money and Information*, Cambridge, MA: Harvard University Press, 2015.

Phan, Thao, and Wark, Scott, "What Personalisation Can Do for *You*! Or, How to Do Racial Profiling Without 'Race,'" *Culture Machine* 20 (2021).

Rieder, Bernhard, *Engines of Order: A Mechanology of Algorithmic Techniques*, Amsterdam: Amsterdam University Press, 2020.

Robertson, Craig, *The Filing Cabinet: A Vertical History of Information*, Minneapolis: University of Minnesota Press, 2021.

Schudson, Michael, *The Rise of the Right to Know: Politics and the Culture of Transparency*, Cambridge, MA: Harvard University Press, 2015.

Shulz, Sébastien, "Un logiciel libre pour lutter contre l'opacité du système sociofiscal. Sociologie d'une mobilisation hétérogène aux marges de l'Etat," *Revue française de science politique* 69 (5–6) (2019), 845–68.

Strathern, Marilyn, "The Tyranny of Transparency," *British Educational Research Journal* 26 (3) (2000), 309–21.

Suchman, Lucy, "Frankenstein's Problem," *Working Conference on Information Systems and Organizations (IS&O)*, Dec 2018, San Francisco, CA, United States, 13–18.

Terzis, Gillian, "Austerity is an Algorithm," *Logic Mag* 3 (2017).

Tsoukas, Haridimos, "The Tyranny of Light," *Futures* 29 (9) (November 1997), 827–43.

Ulbricht, Lena, and Karen Yeung, "Algorithmic Regulation: A Maturing Concept for Investigating Regulation of and through Algorithms," *Regulation & Governance* (2021), 1–20.

Vattimo, Gianni, *The Transparent Society*, Cambridge: Polity Press, 1992.

Yeung, Karen, "'Hypernudge': Big Data as a Mode of Regulation by Design," *Information, Communication & Society* 2 (2016), 1–19.

Ziewitz, Malte, "Governing Algorithms: Myth, Mess, and Methods," *Science, Technology, & Human Values* 41 (1) (2015), 3–16.