

Can free software tackle the lack of transparency in the tax and welfare system? Sociology of political hackers on the margins of the state

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Résumé

Cet article documente une mobilisation qui vise à faire de l'ensemble des informations publiques opaques et élusives qui constituent notre système sociofiscal un commun numérique ouvert à tous. Nous montrons, par rapport à la littérature, qu'il a fallu mener un véritable travail à la fois technique, cognitif et institutionnel pour constituer ce logiciel libre. Ce processus est passé par un ensemble d'épreuves que nous catégorisons. Nous concluons en faisant l'hypothèse que le cas d'Openfisca représente une expérimentation institutionnelle originale menée par des *hackers* politiques aux marges de l'administration sur un mode d'existence particulier de l'État vis-à-vis des communs numériques.

Abstract

This article documents a project that aims to render all of the opaque and elusive public information that constitutes the French tax and welfare system accessible to all, through software said to constitute a “digital commons.” With reference to the existing literature, we show how considerable technical, cognitive, and institutional labor was necessary in order to develop this open-source software. In the process, a number of “tests” had to be negotiated, which we have categorized. We conclude with the hypothesis that Openfisca represents an original institutional experiment, led by political hackers at the margins of the administration, on a particular way in which the state might adapt to the digital commons.

Over the past few decades, two movements have rallied to the cause of digital tools that serve to make information a common good.¹ The first lobbies for the release of information held by the state, a demand voiced since the end of the 2000s by advocates of open data.² In many countries, this has led to legislative reforms and to data produced by public authorities being made available in digital form.³ The second protests against the commodification of knowledge that has gone hand in hand with the advent of so-called information capitalism.⁴ It brings together defenders of hacker culture and free software⁵ who wish to take back control of the production, dissemination, and use of information from the market and the state through the creation of a “digital commons.” A “digital commons,” of which Wikipedia is the paradigmatic example, may be defined as a digital resource produced and maintained by a community according to its own rules of governance and characterized by a regime of shared ownership that is neither private nor public.⁶

This article describes a campaign that has brought together both of these movements. Its origin lies in a critique of the exclusive possession and use, by the Ministry of Economy and Finance (known as “Bercy”), of a particular information resource that economists call a microsimulator. This piece of software plays an important role in the *ex ante* economic evaluation of any reform of the tax and welfare system—that is to say, before it is actually implemented among the population.⁷ The microsimulator makes it possible for decision makers to envisage the costs of the reform, as well as to predict who will benefit and who will lose out as a result—evaluations that until now have been the sole monopoly of agents of Bercy, a few exceptions aside.⁸ Technically, the microsimulator consists of a computer model of most of the rules of the French tax and welfare system, a model of the reform to be evaluated, and a representative database of household tax and welfare data. Although the tax and welfare rules are all available online on the *legifrance.fr* website, they are not available in this integrated, meticulously coded form; as for the tax and welfare data, these are not accessible outside of the civil service, owing to the principle of government secrecy. This campaign, then, sought to open up tax data to actors involved in the evaluation of public policy other than Bercy’s agents and to code, law by law, the entire tax and welfare system into a microsimulator that would then be made a digital commons accessible to all. The movement began in 2011 and resulted in the building of the free software package *Openfisca*.⁹ Initially, it brought together various protagonists: researchers in economics who wanted to be able to come back to Bercy with legitimate counterexpertise; lawyers and developers from the new public agency *Etalab*,¹⁰ responsible for

¹ I would like to thank Sylvain Parasie for his valuable contribution to the writing of this article, Jean-Marc Weller, and the doctoral and postdoctoral students at LISIS, as well as the anonymous reviewers and the editorial team of the *Revue française de science politique* for their careful proofreading.

² Harlan Yu and David G. Robinson, “The New Ambiguity of ‘Open Government,’” *UCLA Law Review* 59, no. 178 (2012), <https://ssrn.com/abstract=2012489>.

³ For a complete history, see the first chapter of Samuel Goëta’s thesis, “Instaurer des données, instaurer des publics. Une enquête sociologique dans les coulisses de l’open data,” thesis in sociology, Télécom ParisTech, 2016.

⁴ Philippe Aigrain, *Cause commune. L’information entre bien commun et propriété* (Paris: Fayard, 2005).

⁵ Sébastien Broca, *Utopie du logiciel libre. Du bricolage informatique à la réinvention sociale* (Neuvy-en-Champagne: Le Passager clandestin, 2013).

⁶ Benjamin Coriat, ed., *Le retour des communs. La crise de l’idéologie propriétaire* (Paris: Les Liens qui libèrent, 2015).

⁷ François Bourguignon and Amedeo Spadaro, “Microsimulation as a Tool for Evaluating Redistribution Policies,” *The Journal of Economic Inequality* 4, no. 1 (2006): 77–106.

⁸ Amélie de Montchalin, “Savoir, c’est pouvoir. Les députés face à Bercy,” *Pouvoirs* 168, no. 1 (February 12, 2019): 99–104.

⁹ <http://fr.openfisca.org>.

¹⁰ <http://www.etalab.gouv.fr>.

the government's open data policy; members of parliament acting in the name of their democratic prerogatives to engage in reasoned legislative debate and to act as a check on government action; and citizen associations involved in causes related to tax justice.

It should be noted that these actors were widely dispersed and rather marginal in comparison to a Ministry of Economy and Finance widely considered the most powerful in Europe.¹¹ However, this did not prevent them from succeeding, within a few years, in making tax data accessible to researchers and producing, on the basis of this information extracted from the heart of the state machinery, a shared information resource of recognized legitimacy that is now challenging Bercy's institutional monopoly on tax expertise. Openfisca is now used daily by thousands of citizens to assess their social rights.¹² Members of parliament are considering using it as their own evaluation tool.¹³ In 2018, it enabled researchers from the Institut des politiques publiques (IPP) to produce the first independent *ex ante* economic evaluation of a draft budget law, the conclusions of which were presented to the chair of the Finance Committee, reported by most major French media outlets, and, more recently, taken up by social justice campaigns (see figure 3).¹⁴ Today, Openfisca brings together some twenty partners—government departments, research institutes, town councils, students, startups, and associations—in France and elsewhere.¹⁵

In this article, we will try to explain how actors who at first sight seem marginal to the “Bercy fortress” have managed to access data of high political value and, in collaboration, have begun the process of making tax and welfare information a digital commons.

The social science and political science literature offers several avenues for understanding the success of such a movement. First of all, the still-incomplete success of Openfisca might be seen as the product of a historical trend that has seen transparency become a cardinal political value.¹⁶ Pierre Rosanvallon, a French sociologist and historian of political theory, shows that the advent of representative democracy went hand in hand with the circulation of budgetary figures in the public sphere.¹⁷ Several laws have given legal expression to this moral duty of the state to make itself accountable, from article 15 of the Declaration of the Rights of Man and of the Citizen to France's 2016 Lemaire law, which stipulates open access to public data by default. However, an explanation in terms of political and legal principles has several limitations. On one hand, the implementation of such regulations tends to encounter bureaucratic barriers, particularly where the Ministry of Economy and Finance is concerned.¹⁸

¹¹ For a critical overview of Bercy's power, see Philippe Bezes, Florence Descamps, and Scott Viallet-Thévenin, “Bercy: empire ou constellation de principautés?” *Pouvoirs* 168, no. 1 (2019): 9–28.

¹² On <http://mes-aides.gouv.fr> and <http://mesdroits sociaux.gouv.fr>; numbers obtained from interviews with those responsible for these platforms.

¹³ See especially <https://entrepreneur-interet-general.etalab.gouv.fr/defis/2019/leximpact.html>.

¹⁴ TF1, *Le Monde*, *Libération*, etc. See the complete list at <http://www.ipp.eu/actualites/11-oct-evaluation-du-budget-2019/>.

¹⁵ Governmental bodies, associations, and researchers in Barcelona, Italy, New Zealand, Tunisia, and Senegal have adopted the tool and developed it to various different stages.

¹⁶ Albert Meijer, “Transparency,” in Mark Bovens, Robert E. Goodin, and Thomas Schillemans, eds., *The Oxford Handbook of Public Accountability* (Oxford: Oxford University Press, 2014); Michael Schudson, *The Rise of The Right to Know. Politics and The Culture of Transparency, 1945–1975* (Cambridge, MA: Harvard University Press, 2015).

¹⁷ Pierre Rosanvallon, *Le bon gouvernement* (Paris: Seuil, 2015), 215–52.

¹⁸ See Alexandre Siné, *L'ordre budgétaire. L'économie politique des dépenses de l'État* (Paris: Economica, 2006), especially chapter 5.

On the other hand, these principles of transparency are counterbalanced by divergent state norms, including the protection of government secrecy.¹⁹

Another approach would be to attribute the success of this movement to technological factors. According to some researchers and activists alike, digital technologies naturally facilitate the free flow and sharing of information.²⁰ By driving work on free software and open data forward, they are thought to stimulate collective action²¹ and citizen action respectively.²² However, these kinds of explanations, often somewhat deterministic, are not entirely adequate either. On the one hand, these same digital technologies can also be used to restrict the free flow of information.²³ On the other, as recent sociological studies show, such explanations neglect the practical and cognitive work that is necessary in order to “open up” data, put it into circulation, and reduce certain informational asymmetries.²⁴

Finally, another approach would be to turn to the literature on commons. In her seminal work, Elinor Ostrom analyzes a large number of cases of the collective management of natural resources that are neither private nor public and identifies eight principles of governance found in all of the examples where this management is considered successful.²⁵ Research on Wikipedia and open-source software since the late 2000s also seems to confirm the importance of these principles of governance in explaining the success of digital commons.²⁶ As far as Openfisca is concerned, however, the limitations of any such explanation lie first of all in the fact that its governance involves public actors who are subject to particular duties, a situation that has enjoyed little attention in a field of research more focused on exploring a third way “beyond market and state.”²⁷ Moreover, unlike natural resources, open-source software, or an online encyclopedia, the very constitution of the resource poses a problem here: The information used to build Openfisca is in fact difficult to identify, opaque, elusive, and politically sensitive. It seems to require a very specific kind of work in order to assemble and utilize it. This kind of assembly process has to date been little explored in research that has focused more on resources made up of more easily identifiable and less sensitive information.

This existing literature, therefore, may provide us with interesting leads but, in isolation, is inadequate to explain the early success of the campaign around Openfisca. Distancing ourselves from any normative, technical, or organizational determinism, we have sought to investigate the Openfisca experience *as it actually happened*. The theoretical framework of

¹⁹ Jean-Michel Belorgey, “L’État entre transparence et secret,” *Pouvoirs* 97, no. 2 (2001/2): 25–32.

²⁰ For a history of how this representation was constructed, see Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006).

²¹ Steve Weber, *The Success of Open Source* (Cambridge, MA: Harvard University Press, 2004).

²² Brett Goldstein and Lauren Dyson, *Beyond Transparency: Open Data and The Future of Civic Innovation* (San Francisco: Code for America Press, 2013).

²³ Maximilian Heimstädt, “Openwashing: A Decoupling Perspective on Organizational Transparency,” *Technological Forecasting and Social Change* 125, C (2017): 77–86.

²⁴ See, in particular, Bernd W. Wirtz et al., “Resistance of Public Personnel to Open Government: A Cognitive Theory View of Implementation Barriers towards Open Government Data,” *Public Management Review* 18, no. 9 (2016): 1335–64; Jérôme Denis, *Le travail invisible des données. Éléments pour une sociologie des infrastructures scripturales* (Paris: Presses des Mines, 2018).

²⁵ Elinor Ostrom, *Governing the Commons. The Evolution of Institutions for Collective Action* (Cambridge and New York: Cambridge University Press, 1990).

²⁶ See, for example, in France, Dominique Cardon and Julien Levrel, “La vigilance participative. Une interprétation de la gouvernance de Wikipédia,” *Réseaux* 154 (2009): 51–89.

²⁷ David Bollier and Silke Helfrich, eds., *The Wealth of The Commons. A World Beyond Market and State* (Amherst, MA: Levellers Press, 2012).

pragmatic sociology²⁸ combined with the sociology of public action²⁹ seems to us best suited to track the sociotechnical, legal, and administrative challenges this movement has faced. Our research is based on twenty-eight interviews conducted with the set of actors involved in Openfisca (founders, economists, developers, MPs, Bercy agents, etc.)³⁰ as well as making use of a large corpus of documentation (parliamentary reports, legislative clauses, newspaper articles, blog posts, etc.).

Unlike the existing literature on transparency, open data, and the digital commons, this article documents a movement that aims to turn an opaque and elusive public dataset into a digital commons open to all. We show that, before setting up shared governance of this resource, substantial technical, cognitive, and institutional work had to be carried out in order to bring it together.³¹ This process involved a series of “tests” that we categorize below. We conclude by hypothesizing that Openfisca represents an institutional experiment carried out by political “hackers” on the margins of the administration, an experiment concerning a particular way in which the state might adapt to the demands of the digital commons—and that in this sense it represents a “state test” that remains in progress.³²

In the first section, we will see how Bercy’s power over information is dependent on digital infrastructure that it owns, and to which it prevents access on the part of those actors who have gradually mobilized to critique this monopoly. In the second section, we trace the beginnings of this movement, paying attention to the technical, legal, and institutional choices made by the founders of Openfisca as they attempted to import certain digital-commons-inspired practices into the civil service. In the final section, we categorize three types of “tests” that the Openfisca community had to face and examine the ways in which it attempted to resolve them.

A campaign against the opacity of the tax and welfare system

To begin, we will review how political scientists have analyzed the opacity of Bercy’s actions. As we shall see, this opacification is partly enabled by its agents’ exclusive access to microsimulators. Finally, we will present the criticisms of the actors (MPs, associations, researchers, and Etalab developers) who identified this exclusivity as a problem and advocated the possibility of producing and exploiting their own digital resource.

The opacity of Bercy

²⁸ Cyril Lemieux, *La sociologie pragmatique* (Paris: La Découverte, 2018).

²⁹ Pierre Lascoumes and Patrick Le Galès, *Sociologie de l’action publique. Domaines et approches*, 2nd ed. (Paris: Armand Colin, 2012).

³⁰ An exhaustive list: the two founders of Openfisca; ten developers from the Openfisca community who have worked or are still working at Etalab, including three successive project leaders; two IPP researchers, including the director; one person in charge of the www.mes-droits-sociaux.gouv.fr portal who is a user and contributor to Openfisca within Mutualité sociale agricole (MSA); four economists from INSEE, DREES, and CNAF working on the INES microsimulator; two members of the DG Treasury who have worked on the SAPHIR microsimulator; a technical manager of the *Journal officiel* at the Directorate of Legal and Administrative Information (*Direction de l’Information Légale et Administrative*, DILA); a general data administrator at the Directorate General of Public Finances (*Direction Générale des Finances Publiques*, DGFIP), an MP and an administrator from the Finance Committee of the Assemblée nationale; a director of the startup Fastoche who is an Openfisca user; and two civil servants from Barcelona City Council, users of and contributors to Openfisca.

³¹ Karim Ben Slimane and Bernard Leca, “Le travail institutionnel: origines théoriques, défis et perspectives,” *Management & Avenir* 37, no. 7 (2010): 53–69.

³² Dominique Linhardt, “L’État et ses épreuves. Éléments d’une sociologie des agencements étatiques,” *Clio@Thémis. Revue électronique d’histoire du droit*, 2007, <http://www.cliothemis.com/L-Etat-et-ses-epreuves>.

Political scientists have shown how Bercy's budgetary decisions have become increasingly opaque.³³ Certainly, as Aaron Wildavsky's pioneering research shows, there has been an increase in the complexity of decisions owing to an incremental proliferation of budgetary reforms adding more and more exemptions and special cases to the existing system.³⁴ That said, this explanation does not exclude the possibility that there are other, more strategic dimensions to this process. According to Alexandre Siné, tax authorities, with their symbolic power and the ethos of their agents, tend to distance themselves from the "profane" while rendering "sacred" the bureaucratic management of public finances—witness the political and governmental culture of fiscal secrecy and the use of the image of the fortress to describe the Budget Directorate in France.³⁵ Moreover, political scientists have analyzed the emergence, over the past forty years, of strategies designed to opacify or technicalize budgetary constraint policies and to call the concept of the welfare state into question.³⁶ They have shown how these strategies of withholding and disguising public economic information serve to circumvent public censure and protest.³⁷

What form do these strategies take in practice? Focusing on microsimulators allows us to understand at a finer-grained level just how Bercy's knowledge/power is materialized in a particular sociotechnical resource.

In the first phase of drafting a tax law, the three crucial steps are securing knowledge of the tax and welfare system, determining the consequences of a reform, and circulating this assessment within certain networks within the administration.³⁸ As Nicolas A., founder of Openfisca and former economic advisor to the Ministry of Economy and Finance, explains:³⁹

When you're in the ministerial cabinet and you want to have a study of something, you ask three people most likely to be responsive: Each of them has the tool, but they also have their own agenda within the culture of the administration in question. And the ability to run the simulation and come up with a figure means that you can push the reform you want to push. . . . Ultimately, whoever manages to build a scenario that fits the bill, that satisfies the objectives, and that doesn't seem to end up with everyone taking to the streets, well, that's the one who'll get the support. So, if you don't have the tool, you won't get the reform you want (October 2018).

The government thus requests *ex ante* economic assessments from certain departments, generally those that have legitimacy and the necessary human and technical resources. It is at this phase of the drafting of public policy that microsimulators come in, because those who have learned how to use them are able to guide the drafting of the law by supplying decision

³³ For a review of research on opacification, see Philippe Bezes and Alexandre Siné, "Gouverner (par) les finances publiques: introduction," in Philippe Bezes and Alexandre Siné, eds., *Gouverner (par) les finances publiques* (Paris: Presses de Sciences Po, 2011), 56–97.

³⁴ Aaron Wildavsky, *Politics of The Budgetary Process*, 4th ed. (Boston: The Book Service Ltd, 1986).

³⁵ See Siné, *L'ordre budgétaire*, chapter 5.

³⁶ On the American and British cases, see Paul Pierson, *Dismantling the Welfare State? Reagan, Thatcher and The Politics of Retrenchment* (Cambridge: Cambridge University Press, 1994).

³⁷ Philippe Bezes, "The Hidden Politics of Administrative Reform: Cutting French Civil Service Wages with a Low-Profile Instrument," *Governance* 20, no. 1 (2007): 23–56.

³⁸ Laure Bonnaud and Emmanuel Martinais, "Écrire la loi. Un travail de bureau pour hauts fonctionnaires du ministère de l'Écologie," *Sociologie du travail* 55, no. 4 (2013): 475–94.

³⁹ Some names have been changed.

makers with statistical arguments.⁴⁰ However, up until 2011, there were only three permanent microsimulators in France: two at Bercy at the Treasury Directorate General and at the National Institute of Statistics and Economic Studies (Institut national de la statistique et des études économiques, INSEE), and one at the National Family Allowance Fund (Caisse nationale des allocations familiales, CNAF), and none of these bodies were willing to make them more widely available.⁴¹ In the interests of reversing this asymmetry of knowledge/power, microsimulators were to become the locus of criticism from actors who felt marginalized in the public scrutiny arena.⁴²

Disempowered MPs

These criticisms were first voiced by MPs. It is they who receive a draft law once it has been approved by the Council of Ministers for debate, amendment, and voting. Rapporteur MPs from the Committees on Social Affairs and Economic Affairs and in particular the Finance Committee, assisted by their civil servants, translate texts written in abstruse legal language so as to render explicit and assess their consequences for tax and welfare. According to Pierre Rosanvallon, it is this process of explication that makes possible and fulfils the principle of reasoned democratic debate and parliament's function of government oversight.⁴³

Since the 1990s, however, MPs, rapporteurs, and civil servants have complained that they no longer have the means to evaluate tax and welfare texts.⁴⁴ The evaluation tools available to the Finance Committee are few and far between, if not entirely non-existent in the case of *ex ante* economic evaluation. Indeed, the first report of the Finance Committee's Evaluation and Control Group (Mission d'évaluation et de contrôle, MEC), as early as the turn of the 2000s, deplored the fact that

Draft laws coming up for discussion in our assembly are rarely subject to *ex ante* evaluation. The notes on potential impact that ought to accompany draft laws, when they exist, are very brief. Likewise, parliament generally has no access to any real simulation of proposals for the reform of tax or social contributions presented to it.⁴⁵

MPs are then often obliged to rely on Bercy's expertise, "without parliament being in any position to make a critical assessment."⁴⁶ This is why some members of the Finance Committee, including current vice chair Jean-Noël Barrot, campaigned to create a specific

⁴⁰ For a general review of the impact of microsimulators in the evaluation of public policy, see Didier Blanchet et al., "Évaluation des politiques publiques, *ex post* et *ex ante*: l'apport de la microsimulation," *Revue économique* 67, no. 4 (2016): 685–96.

⁴¹ The INES (developed by INSEE and DREES), SAPHIR (developed by DG Treasury), and MYRIAD (formerly developed by CNAF, now abandoned in favor of INES) models. As discussed below, these models were made open source in June 2016.

⁴² For a review of the controversies and the actors involved, see Pierre Lascoumes and Clément Lacouette-Fougère, "Les scènes multiples de l'évaluation. Les problèmes récurrents de son institutionnalisation," Paris, Laboratory for Interdisciplinary Evaluation of Public Policies, June 2013.

⁴³ Rosanvallon, *Le bon gouvernement*, 220.

⁴⁴ For details on the procedures for draft finance laws and criticisms concerning the available resources, see Hervé Message, Michel Bermond, and Jean-Luc Matt, "Lois de finances et lois de financement à l'Assemblée nationale," Assemblée nationale, 2015 [1996].

⁴⁵ Lascoumes and Lacouette-Fougère, "Les scènes multiples de l'évaluation," 87.

⁴⁶ "Les moyens de contrôle et d'évaluation: format et compétences d'un organe d'expertise propre au Parlement," in "2^e conférence des réformes: proposition des groupes de travail," Assemblée nationale, June 2018, 200.

evaluation body that, among other things, would be equipped with a microsimulator and access to tax data to run on it.⁴⁷

Researchers without tools

Bercy's "monopoly on legitimate expertise" has also been problematized by economists from independent and academic institutes, such as Thomas Piketty.⁴⁸ For the most part, these are actors who produce recommendations for public institutions. When we asked Antoine Bozio, director of the IPP and a former doctoral student of Piketty's, how much power Bercy had in the drafting of laws, he answered:

100 percent . . . even if the political request is almost always made by the president and the prime minister, it is the minister of finance and the secretary of state for the budget who draft the law. It's them who say: "We'll put x amount into the *prime d'activité* [a French welfare benefit], and who get to see all the indicators and simulations behind it. The force, the power of expertise lies in the fact that the text is incomprehensible. . . . Bercy has an almost total monopoly on the analysis and production of budgetary data . . . and therefore wields really radical power (October 2018).

The IPP, which currently includes some twenty researchers, was created in 2012 by the Paris School of Economics and the Center for Research in Economics and Statistics (Centre de recherche en économie et statistique, CREST), two major French centers for economics research. Notably, it was founded by Thomas Piketty along with François Bourguignon, an international pioneer in microsimulation research, with the aim of developing the quantitative evaluation of public policy in France and contributing to public debate. As we shall see in the second half of this article, the IPP was to play an important role in the development of Openfisca.

A segment of civil society left bewildered

As for civil society, as the saying goes, "all are presumed to know the law." Legal experts, public information sites, associations, and other interest groups continually obtain and decipher legislative texts in order to make their economic and social implications known and to inform citizens. As the ultimate recipients of these measures, citizens must indeed be kept informed of their rights in this way. However, as we pointed out in the introduction, such dissemination of legal information has become an increasingly complex affair over the last thirty years. According to some associations, such as the Observatory on Non-Take Up of Social Rights and Public Services (Observatoire des non-recours aux droits et services, Odenore), the increase in the rate of failure to take advantage of welfare rights shows that the poorest citizens have little grasp of the tax and welfare system compared with other dominant interest groups⁴⁹—an inequality that would serve to rally activists to the Openfisca cause.

Etalab, champion of open access to public data

⁴⁷ Ibid. Note that a plan for a microsimulator put in place by the Assemblée nationale and the OFCE, with the participation of economists Alain Trannoy and Guillaume Allègre, was never carried through owing to insufficient resources.

⁴⁸ See the opening pages of Camille Landais, Thomas Piketty, and Emmanuel Saez, *Pour une révolution fiscale. Un impôt sur le revenu pour le XXI^e siècle* (Paris: Seuil, 2011).

⁴⁹ Observatoire des non-recours aux droits et services (Odenore), *L'envers de la "fraude sociale." Le scandale du non-recours aux droits sociaux* (Paris: La Découverte, 2012).

One final player to join the movement against Bercy’s opacity was the young agency Etalab, responsible for “open data and open government.” Since its creation in 2011, Etalab has reported directly to the prime minister, but for the past eight years it has had an unstable relationship with the government departments, testifying, according to Samuel Goëta, to “the shifting moorings of open data in government practices.”⁵⁰ Today it is part of the Interministerial Directorate for Digital Technology and the State Information and Communication System (Direction interministérielle du numérique et du système d’information et de communication de l’État, DINSIC) and is made up of some thirty jurists, developers, data scientists, and project managers. Its principal mission is to “implement the principles of open government” by encouraging government departments to “open up” their data,⁵¹ sometimes leading to tense, if publicly cordial, relations with some of these departments, including Bercy.

The Ministry of Economy and Finance handles a large amount of data, and in particular a huge number of lines of code. For example, Bercy’s tax legislation department breaks down legal texts into operational circulars that are sent to its technicians, who enter the laws into the source code of the software that calculates—and today deducts at source—a number of taxes. It may be the *Journal officiel* (JO) that gives us the definitive version of the law, but it is this code that actually implements the legislative texts. Lawrence Lessig’s famous phrase “code is law” takes on its full meaning here. Similarly, the agents who maintain Bercy’s microsimulators will also translate the legislative texts into computer code in order to update their tool. However, these codes and these simulators, considered public data, were not publicly available before the passing of the 2016 “Digital Republic” law (*Pour une République numérique*, PRN), which stipulates open access by default to all source code used by government departments. As we shall see, even before this legislation was passed, members of Etalab campaigned to have access to this software as a resource for building Openfisca.

Table 1. Summary

Actors	Institutions	Criticisms	Proposed action
MPs	Finance Committee, Committee for Evaluation and Control	Impossibility of any independent check on government action	Create an instrument allowing for the <i>ex ante</i> evaluation of the effects of tax and welfare reforms
Researchers	Institute for Public Policy (Antoine Bozio), Paris School of Economics (Thomas Piketty)	Bercy’s monopoly on legitimate expertise in tax and welfare matters	Participate in evaluation and stimulate public debate on public tax and welfare policies
Citizen associations	Observatory for the Non-Take-Up of Social Rights and Public Services (Odenore)	Social effects of the complexity of the tax and welfare system	Address inequalities by reducing non-take-up of welfare benefits

⁵⁰ Samuel Goëta, “Une petite histoire d’Etalab: comment l’*open data* s’est institutionnalisé en France,” *Statistique et Société* 5, no.3 (2017):11–17.

⁵¹ <http://www.etalab.gouv.fr>.

Government departments	France Stratégie (Mahdi B.), Etalab (Henri Verdier)	Bercy's resistance to making its data public	Make government departments more "transparent" and the state more "open"
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In the following section tracing the history of Openfisca, we will show how a number of these actors critical of the opacity of the tax and welfare system coalesced around common goals and a shared digital resource, in the hope of counteracting the asymmetry between themselves and “the Bercy Fortress.”

Openfisca: Building a collaborative infrastructure on the margins of the state

In this section we will see how Openfisca was developed as collaborative, freely available software on the margins of the state, before enlisting a prime minister to its cause and finally becoming a resource straddling the worlds of the state, research, and the digital commons.

Open software on the margins of the state

Openfisca is the brainchild of two economic researchers from France Stratégie, an institution with ties to the prime minister, in charge of guiding the nation’s major strategic directions. They are Mahdi B., who obtained a PhD in physics and subsequently became a researcher in economics at the Banque de France and France Stratégie before joining the IPP, and Nicolas A., a graduate of the École Polytechnique and an economist, who left France Stratégie in 2012 to join the fiscal policy unit of the Treasury Directorate General and subsequently the office of the Ministry of Economy and Finance. In 2011, their role at France Stratégie consisted in modelling certain welfare reforms in order to forecast their socioeconomic effects, inform public debate, and advise decision makers. However, they lacked the essential resources they needed for this work: a microsimulator and the data to run it with. Their first move was to turn to departments that had a microsimulator, particularly Bercy, but they received only polite refusals. As Mahdi B. recalls, “It really annoyed us to know that it existed within the state, but we didn’t have access to it” (May 2018).

They then decided to produce their own model, going against the dominant governmental logic and turning to a collaborative model inspired by the practices of scientific research and free software.

[Mahdi] had told me that in meteorology in particular, all the labs were making their own models to simulate global weather patterns and exhausting themselves in the race to build the perfect model. Then one of the labs opened up its model, and everyone started collaborating on the same model. . . . And I thought to myself, that’s exactly the position we’re in today. We had several departments building their own models, competing with one another (Nicolas A., October 2018).

From the very beginning we had this idea of making a tool that would be free and open-source, because we were aware that we wouldn’t be able to maintain it on our own (Mahdi B., May 2018).

Mahdi B. and Nicolas A.'s vision would leave an enduring mark on the technical and legal characteristics of Openfisca. In this piece of software, they inscribed a script with three orientations:⁵² (1) research, (2) decision support, and (3) collaboration. (1) As researchers themselves, their objective was to consolidate a stable and empirically relevant model that would be of use to themselves and to other researchers, while their role at France Stratégie was to stimulate public debate and to advise decision makers. (2) Although they developed Openfisca partly in their free time, it was this aspect of the resource that was of particular interest to their managers, who gave approval for the project. This early interest in Openfisca on the part of France Stratégie illustrates the importance of the tool in the eyes of a peripheral department that at the time was undergoing restructuring, seeking legitimacy, and keen to advance its own political agenda, especially in relation to Bercy.⁵³ (3) Finally, aware of the failure of previous microsimulators in the world of research, owing to insufficient resources and the lack of any sustainable community of contributors, Mahdi B. and Nicolas A. wanted to open the resource up to collaborative contributions. The legal and technical decisions they took in this respect, inspired by the open software practices of which Mahdi B. was keenly aware, were to prove important later on. First of all, they chose an open programming language—Python—over other languages, such as Stata, that were closer to their professional practice but would have required an expensive license. They then uploaded the source code to Github, a collaborative coding platform used by many open-source software communities. The architecture of this platform allows the code to be broken down into modules upon which separate teams can work independently of one other, before integrating their changes back into the main body of the code. This modularity, which inspired Mahdi B.'s approach to Openfisca, is one of the characteristic features of successful collaborative digital projects bringing together actors with divergent interests.⁵⁴ Finally, they chose to distribute Openfisca under a free license so as to allow anyone who wished to do so to access, modify, and redistribute the software legally.

In this way, Openfisca, taking shape on the margins of a department that was peripheral but nevertheless linked to the prime minister, was inspired by the practices and collaborative technologies of the world of free and open-source software and the digital commons.

Openfisca enlists public actors

However, at this stage there were still no actual contributors, and the number of laws modelled in the software was limited. As the two founders had no access to Bercy, INSEE or CNAF's exhaustive data, they had to run the model with "test cases", which are useful for evaluating the impact of a reform on a hypothetical individual (for example, a single mother earning €24,000 per year), but not on the real population. Nicolas A. left France Stratégie in 2012 and, following the change of government, joined the forecasting department of the Treasury Directorate General at Bercy, where he operated the very microsimulator to which Openfisca had set itself up as a countermodel. He did try to disseminate his thinking on the opening up of digital resources among his new colleagues, organizing informal meetings with all of the departmental actors involved in microsimulation so as to "start a dialogue" (Nicolas A., October 2018). Until 2013, therefore, there was little opportunity for Openfisca to be developed further.

⁵² On the notion of script, see Madeleine Akrich, "Comment décrire les objets techniques?" *Techniques & culture* 54–55 (2010): 205–19.

⁵³ Pierre Rosanvallon et al., "Rapport au Premier ministre. Pour un Commissariat général à la stratégie et à la prospective" (La Documentation française, 2012).

⁵⁴ Weber, *The Success of Open Source*.

Nevertheless, in December of the same year, Mahdi B. managed to capture the interest of a major actor. The sociology of innovation teaches us that a technology succeeds in developing once its defenders manage to convince a group of actors that it is a necessary vehicle, a relevant means of expression, to meet their interests.⁵⁵ At that time, the prime minister wished to carry out a major tax reform and wanted to develop an online simulator as an educational tool to explain the reform to citizens. Mahdi B. thus found himself in Jean-Marc Ayrault's office in his capacity as an economist for France Stratégie. He was invited by Fabien Dell, economic advisor to the prime minister, who also summoned Henri Verdier, then director of Etalab, and Antoine Bozio, director of the IPP, whom Dell knew from working with Piketty. During the meeting, Mahdi B. presented Openfisca, using a visualization tool he had built to simulate and portray the impact of a particular tax change on the monthly income and outgoings of a test case (see figure 1).



Figure 1: Breakdown of the impact of the tax and welfare system on a typical test case

Explanation: Screenshot of the online simulator permitting visualization of what a typical test case (whose characteristics are indicated in the left-hand column) stands to gain (light gray) or lose (dark gray) from various welfare benefits, taxes, and other contributions (shown on the horizontal axis of the graph and detailed in the right-hand column). Source: www.youtube.com/watch?v=bEgNZsrcX54.

Recall that, toward the end of 2012, Jean-Marc Ayrault had penned a report on the use of free software within the civil service.⁵⁶ So: the tax system was to be reformed, this reform had to be explained to citizens, and that required an online simulator, the open-source software Openfisca being the ideal tool. This chain of reasoning on the part of Mahdi B. convinced Dell and enlisted him to the cause and, through him, the prime minister. Bozio proposed to draft in the IPP by using Openfisca to model the upcoming reform, and Etalab was to be in charge of making the model accessible online. This second step in the construction of Openfisca would give it a new script oriented toward understanding the law: the goal was no longer research or decision support, but enabling citizens to find their way through the complex tangle of the tax and welfare system.

⁵⁵ See Madeleine Akrich, Michel Callon, and Bruno Latour, "À quoi tient le succès des innovations?" *Annales des Mines* 11–12 (1988): 4–29.

⁵⁶ Jean-Marc Ayrault, *Usage du logiciel libre dans l'administration* (Paris: Secrétariat général du gouvernement, 2012).

Openfisca reflects heterogeneous interests

Two months later, however, everything changed. Following the defeat of the Socialist Party in the municipal elections, Ayrault left his post. The reform was abandoned, the political patronage ended, and the planned site never saw the light of day. The alliance that had been formed with a major actor was now broken, leading to the disappearance of the first funding and ephemeral recognition that Openfisca had obtained—reminding us, in passing, of the special fragility that the vicissitudes of political life lend to any public support for innovation.⁵⁷

Despite this setback, the episode had allowed two actors, albeit less prominent than a prime minister, to take an interest in Openfisca. What reasons were put forward by the directors, economists, and developers of IPP and Etalab for continuing their collaboration around Openfisca? Bozio tells us:

I met with Henri Verdier, and we discussed Openfisca. At the time, he said: “I need some wins, I need to show decision makers that what we do is useful, that we save money, and that we make state action more effective.” . . . Now, that’s not what we at the IPP are looking for at all . . . We want to promote the democratic debate of major policies . . . but we needed money and [Etalab] was willing to pay for it (October 2018).

There are divergent interests at work here: Bozio was looking for funding for the IPP and for legitimate opportunities to drive public debate. Verdier was looking for opportunities to legitimate Etalab’s work with government departments, and Openfisca provided a good example of how to communicate the “open government” policy he wanted to implement.⁵⁸ On the one hand, their specific divergent needs were no barrier to their sharing a common objective: to access the tax and welfare data held by Bercy and use it to produce a microsimulator. On the other hand, this common objective could be met by the construction of a digital infrastructure open to collaborative contribution (open software license, code, and work platform accessible online) that would allow the aggregation of heterogeneous practices (software writing, encoding of legislation, etc.). Finally, Mahdi B., IPP economists, and Etalab developers would get together informally in coffee shops and meetings, but most of all online, on the Slack communication network and their Github work platform. This helped them get through the many blockages that occur during software development. Thus, the link between these different actors was not so much institutional as forged by a mutual need, and it was sustained over time through informal relationships, online communication tools, and a digital infrastructure designed to be open to collaboration.

Having succeeded in aligning the interests of these different actors, the project was to face further tests that would challenge the boundaries of the state. In the next section, we analyze three of these in detail, trying to understand how each actor involved played a role in extracting tax and welfare information from the heart of the government machinery and attempting to make it a legitimate digital commons by reconfiguring certain aspects of the state’s operational model.

The state put to the test by Openfisca, and vice versa

⁵⁷ For a fine lesson on this subject, see Bruno Latour, *Aramis or The Love of Technology*, trans. C. Porter (Cambridge, MA: Harvard University Press, 1996).

⁵⁸ Of eleven articles published on his blog in 2014, four mentioned Openfisca—more than a third. See <http://www.henriverdier.com>.

The first test, which we will call the test of openness, consisted in creating a practical, legal, and digital network to access Bercy's software and tax data. The second, which we will call the legitimacy test, consisted in securing legitimacy for Openfisca among the scientific, government, and media communities. The third test, which remains unresolved, raises the question of Openfisca's institutional positioning on the boundary of the state.

The openness test

We will illustrate the openness test through two examples of situations in which Openfisca members wanted access to information from inside the government: the source code of the software that calculates taxes and household tax data.

The opening up of the tax source code: "David . . . taking on Bercy's Goliath"⁵⁹

One of the difficulties involved in building Openfisca consisted in finding the texts of the tax and welfare laws, understanding them, translating them into programming formulas, and encoding them into the software in an exhaustive and consistent manner. The *Journal officiel* is the exhaustive "source of truth" for French law, but it is complex to read, especially for Etalab developers not initiated into the minutiae of tax and welfare. As we saw above, Bercy's technicians had already formulated some of the tax rules in the source code of the tax calculator. In 2014, Paul B., a trainee economist from Etalab working on Openfisca, learnt of the existence of this source code developed by colleagues a few floors above him (Etalab's offices being in Bercy at that time), and wanted to access it to facilitate his work. He went upstairs and made the request, but after several refusals he decided to take it to the administrative tribunal.

Laurent P., general data administrator at the Directorate General of Public Finance, explained that this opening up of the code was experienced by Bercy as a real "trauma":

They forced our hand a little at the time. Now we're fine with it, because it allowed us to go through a series of steps before opening up the code, which was a real trauma for us, with the genuine fears that you find in any kind of exposure: Aren't they going to find errors in this code that we'll be blamed for? What are people going to do with it? Are there security issues? Aren't there pieces of proprietary code that we can't open up? . . . You know, we had to go through endless debates within the steering committee on something as symbolic and sensitive as this (October 2018).

Similar fears were experienced in the offices of the Ministry of Economy and Finance:

When I joined the office in 2015, one of the first subjects I heard talked about was: "Ah, there are annoying people who are asking us for access to the tax code." [At] one of the first meetings I attended, the answer was: Yes, it's nonsense, it's dangerous, who knows what they're going to find in there (Nicolas A., October 2018).

After two years of legal battles, Paul B. finally obtained a favorable opinion from the Commission for Access to Government Documents (Commission d'accès aux documents

⁵⁹ Subheading of Marc Rees's article, "Le fisc refuse toujours de communiquer le code source de ses logiciels," <http://www.nextinpact.com/news/98024-le-fisc-refuse-toujours-communiquer-code-source-ses-logiciels.htm>. Accessed February 14, 2019.

administratifs, CADA) and then from the administrative tribunal.⁶⁰ In our opinion, two factors explain this success. The first is Paul B.’s twofold position both within and outside the civil service. He was at Etalab when he initiated the referral, but he did so as an independent individual: “Etalab was very happy that I was doing it outside of Etalab. . . . [They] didn’t want to be suing the government” (Paul B., May 2018). In addition, he received support from journalists, the free and open-source software community, and MPs who supported the PRN law. This test made its mark in the legal sphere, since, in parallel to the request made by this Etalab trainee, and drawing conclusions from his experience, left-wing MPs proposed an amendment that would be adopted by the Assemblée nationale, seeking to reaffirm the right of access to the source code of software used within government.⁶¹

Once obtained, however, no one either at Etalab or at the IPP was able to use this code, because it was written in an ad hoc programming language and the cost of translating it for use in Openfisca would be too high. This confirms recent research on open data that we mentioned in the introduction, which puts paid to the illusory idea that, without additional cognitive and practical work, it would be possible to read and make use of information extracted from the machinery of the state simply because it had been made available.⁶² But above and beyond that literature, this test highlights the institutional difficulty of gaining access to government instruments as symbolically charged as the tool that calculates taxes and, consequently, the institutional labor necessary to make this happen.

The opening up of tax data

The decrees implementing the PRN Law of 2016 enshrined the principle of opening up public data by default. However, the case of Openfisca illustrates the political difficulties involved in implementing this principle within the civil service. One such difficulty is the fact that some data held by government departments constitutes a valuable information resource that plays a part in the balance of power between competing bureaucratic entities.

As Nicolas A. argues, “[the data] gives us a monopoly on dealing with certain public policy issues, and departments don’t want us to talk about subjects they consider their exclusive prerogative (October 2018).” So, the CNAF owns the data of its recipients, Bercy its household tax data, and INSEE the data from the Tax and Social Incomes Survey (Enquête revenus fiscaux et sociaux, ERFS), and each can draw its own statistical expertise from using its data in its microsimulator. A Committee for Statistical Confidentiality was set up in 1951 to authorize certain public officials to use the ERFS data, which is one of the most complete databases, while guaranteeing the protection of the personal data collected.⁶³ Researchers outside the civil service were only allowed to access it in 2008, and only after much debate.⁶⁴ However, both Bozio and Dell (who we met in the prime minister’s office) would push for the data of CNAF recipients and Bercy’s tax data to be made available to researchers, and in particular to be used in their microsimulator in order to improve their independent evaluations.

⁶⁰ Adrien Fabre, “HowTo: obtenir d’une administration l’accès à un code source,” <https://forum.etalab.gouv.fr/t/howto-obtenir-dune-administration-lacces-a-un-code-source/186>. Accessed February 14, 2019.

⁶¹ See article 2 of law no. 2016-1321 of October 7, 2016, the “Digital Republic Law.”

⁶² Jérôme Denis and Samuel Goëta, “La fabrique des données brutes. Le travail en coulisses de l’*open data*”; “Penser l’écosystème des données. Les enjeux scientifiques et politiques des données numériques,” congress, Paris, February 14, 2013.

⁶³ The ERFS (INSEE, October 29, 2019) provides information on the types of income that households receive. For more details, see <http://www.insee.fr/fr/metadonnees/source/serie/s1231>.

⁶⁴ Jean Gaeremynck, “Le comité du secret statistique,” *Courrier des statistiques* 128 (December 2009).

This test, then, consisted in gaining legal, material, and technical access to these datasets so as to be able to make use of them.⁶⁵ As Bozio recounts:

When I arrived at the IPP, no one had access to the tax data. . . . The dataset is very rich in France, but we didn't have access to it. I made a request to the Statistical Confidentiality Committee in 2011. . . . The request was refused by the tax authorities. . . . We went to talk to the office of the Minister of Finance at Matignon. . . . Even so, it took three years, but it's a revolution. . . . The fact that we got it unblocked for us also unblocked it for INSEE. Now we can go through the Remote Security Center (Centre d'accès sécurité à distance, CASD): smart card, fingerprint, etc. (October 2018).

As was the case for the tax source code, the fact that Openfisca advocates were able to negotiate this test was to make its mark in the legal sphere. The law of July 22, 2013 saw the Ministry of Economy and Finance lose its monopoly on one of the most precious resources for running the microsimulators: Researchers could now access tax data, albeit only subject to the authorization of the Statistical Confidentiality Committee and the minister in charge of the budget.⁶⁶ So, even if theoretically it was now open to researchers, there was still political resistance:

We have access to all tax data held by the Ministry of Finance. Legally speaking, that's what has become possible. . . . In practice, you always need authorization from the minister . . . so it doesn't always apply to all data. *Like what?* The data on the ISF [solidarity tax on wealth], there's no question of anyone getting access to that for the moment. There's still a lot of sensitive data out there (A. Bozio, October 2018).

Today, in order to use tax data and provide independent counterexpertise on government tax and welfare reforms, researchers must go through the Secure Data Access Center (Centre d'accès sécurisé à distance, CASD). This is a fairly complex sociotechnical system: Researchers have to obtain clearance from the Committee for Statistical Confidentiality, install a secure computer terminal in a locked room, unlock it using fingerprints and a personal access card, then run the software on encrypted data. Only the final results can be exported, and these will be checked to ensure anonymity. The "openness" here can therefore be understood as the establishment of a materially, legally, and technically secured sociotechnical network, some parts of which are not yet connected—quite some way from the imaginary of fluidity conveyed by techno-optimist discourses on open data.

The legitimacy test

The second test related to the process of obtaining institutional legitimacy for Openfisca as a tool for determining the official position on what the law is, in relation to other government departments, and developing recognized expertise, in relation to Bercy.

Acquiring the legitimacy to officially state what the law is

Between 2014 and 2015, two projects aimed at making tax and welfare law intelligible were developed by the IPP and Etalab using Openfisca. The first was the "simplified pay slip [*fiche de paie simplifiée*]" project, which aimed to simplify, automate, and make free of charge the

⁶⁵ Antoine Bozio recounts this episode in detail in his research supervisor's dissertation: "Économie publique de la protection sociale," EHESS, Aix-Marseille Université, 2016, part 5, chapter 3.

⁶⁶ See article 104 of law no. 2013-660 of July 22, 2013 on higher education and research teaching.

issuing of pay slips, a process that used to be a complex affair requiring legal expertise. The second was the “mes-aides [my helpers]” project: a website developed in connection with certain associations, designed to give citizens personalized information on what welfare benefits they are entitled to as a way to counter the non-take-up of benefits.

Despite the apparent simplicity of these projects, making this information visible raised the problem of its official status. The question arose as to who could legitimately produce and disseminate tax and welfare information:⁶⁷

[In regard to the simplified pay slip,] people said: “It’s not for the IPP or Etalab to do the math, what we want is a guarantee from the state. The state . . . the government departments, said: “They’re going to attack me if there’s an error, [I] can’t commit myself to saying that the tax and welfare system is like that.” So, there’s no commitment on the part of the state, there’s no guarantee, there’s just: “Go and look at the *Journal officiel* and if you don’t agree then sue us” (A. Bozio, October 2018).

This appropriation by other actors on the margins of the administration of tools and competences to advise on how the law should be applied, was experienced by government departments historically seen as the legitimate authorities on tax and welfare issues as an attack on their institution. On one hand, this new voice confronted them with their own inability to state with any certainty the rules they were supposed to be responsible for applying. On the other hand, as with the example of the tax source code discussed above, it threatened to reveal errors on their part, or at least to call their account of things into question. If “mes-aides” calculates a benefit amount that differs from the amount that their system is actually allocating to an individual, then that individual can make a claim, which would raise the question of who is right—their own system or Openfisca. Agents were therefore reluctant to see other administrators—particularly Etalab developers who did not necessarily have any competence in tax and welfare issues—take on the legitimacy to officially state the amount of such and such a state benefit or tax in their place. Certain key elements toward an analysis of this situation are provided by the sociology of the state, which seeks to explain how the state produces government documents and an “official” point of view.⁶⁸ Knowing who speaks officially in the name of the state is indeed a major problem—the institution (or official) with this authority enjoys a legitimacy on which it will try to retain the monopoly; but, in turn, it runs the risk of losing face if its word is contradicted by other sources of truth.⁶⁹

“Mes-aides” therefore met with great resistance, particularly from the Ministry of Social Affairs and Health’s Directorate General for Social Cohesion (Direction générale de la cohésion sociale, DGCS). This resistance resulted in institutional blockages and constant checks for more than a year and a half, so as to test the resource before finally validating it, reassured by the accuracy of the results and the advice of certain MPs.⁷⁰ This allowed “mes-aides” to remove the “beta” banner from its site and to speak officially on behalf of the state.⁷¹ The site is now used daily by more than 10,000 citizens to assess their social rights.

⁶⁷ This question runs through Pierre Bourdieu’s work on the state, which is, in his words, “the place from which the official is spoken”. See Pierre Bourdieu, *On the State: Lectures at the Collège de France, 1989–1999* (Cambridge: Polity Press, 2014), 55.

⁶⁸ Jean-Marc Weller, *Fabriquer des actes d’État. Une ethnographie du travail bureaucratique* (Paris: Economica, 2018).

⁶⁹ Bourdieu, *On the State*.

⁷⁰ See proposition no. 10 in Gisèle Biémouret and Jean-Louis Costes, “Rapport d’information sur l’évaluation des politiques publiques en faveur de l’accès aux droits sociaux,” Assemblée nationale, October 2016.

⁷¹ Beta refers to a version of a software package made available before its official launch.

Gaining legitimacy for expertise

As well as being able to say how the tax and welfare system should be applied to individuals, actors mobilized around Openfisca, in particular IPP researchers, had to obtain recognition of the quality of their expertise in order to weigh in on the public debate in the face of Bercy's monopoly on legitimate speech.

In 2014, Mahdi B. left France Stratégie to join the IPP in order to work on the development of Openfisca. This research institute was founded in 2011 by various researchers from the Paris School of Economics (including Thomas Piketty and François Bourguignon, the director at the time and a pioneer in the field of microsimulation) and modelled on the Institute for Fiscal Studies (IFS) in London where Bozio worked for five years. The IFS is regarded as a major scientific and institutional authority in public debate, particularly during the vote on the UK budget.⁷²

Researchers don't have access to Bercy's models. But to measure the effects of taxes, we need to identify the real effects; we need these tools. What's striking about the IFS is that it is research that fueled public debate, so that by doing one good thing, we could do the other as well (A. Bozio, October 2018).

Bozio, Mahdi B. and other economists who would later join Openfisca understood a microsimulator as a statistical tool for both description and prescription; but in order to succeed in making Openfisca a legitimate tool for prescription in public debates, it first had to be made into an exhaustive descriptive tool recognized by fellow researchers.

With this in mind, the IPP set itself the task of reconstructing all of the French *barème* scales since 1917. The *barème* scales represent all the fixed data of the tax and welfare system—for example, the rates of income tax or the yearly *livret A* (a tax-free instant-access savings account) rates. One would think that this information would be available in digital form somewhere within the administration. In fact, considerable cognitive and exegetical work on the legal texts proved necessary in order to reconstruct the past reality of the tax and welfare system:

We bought all the legislative briefs, the income tax and social tax brochures; there are whole libraries of this stuff, and we tried to find the descriptions for each year and pull out the *barème* rates. Ideally, we wanted to find the references in the briefs and then look them up in the *Journal officiel*. . . . [But in fact] this is information that has never been kept; the administration itself doesn't know! . . . Even for social contributions, it's a large amount, it's simple, and you'd think you could find it, but no. . . . Now, we've done a lot, and with Etalab, who code for "*mes-aides*," it's growing (A. Bozio, October 2018).

As far as current legislation is concerned, Etalab, along with other bodies that have joined the Openfisca community, such as Mutualité sociale agricole (MSA) and the city councils of Paris, Rennes, and Brest, are contributing to the updating of national and local law and *barème* scales. Each actor has channels of access to current legal data in its field of expertise, and encodes the legislation it needs into Openfisca. For example, Clara M., an economist at the IPP, was

⁷² Simon Akam, "The British Umpire: How The IFS Became The Most Influential Voice in The Economic Debate," *The Guardian*, March 15, 2016.

commissioned by thirteen French *départements* to prepare and simulate a Universal Basic Income (UBI) experiment. As a part of this, she had to update the income tax formulas:

I updated the 2014–2016 income tax. I had to do this because it was needed to do the UBI simulation. And I did it by changing the legislation line by line. For example, tax credits vary every year [we go onto Github, the platform that allows researchers to work on and store the Openfisca code, so she can show us a specific case. See figure 2 below]. So, if you look there [she indicates the address bar at the top of the screen], here we're in the model of the French tax and welfare system, in the models of compulsory deductions and, more specifically, tax reductions. This is the Scellier tax reduction for real estate investment [she indicates the "label" line 2697]. And if you look here, you'll see the changes that I deleted in red [with a – in front] and those that I added in green [with a + in front]: I extended the reference period until December 31, 2014, and below I wrote the formula for the legislation, updated, along with the actual calculations [she shows me about fifty lines below with the formulas and the code for the law].

This contribution, made to meet a specific requirement, enriches the resource by updating it and ultimately benefits the entire community. All of the successive contributions made by various actors, then, contribute toward achieving exhaustiveness, precision, and annual updating of this data, including the *barème* scales, which are now a data resource for the academic and administrative spheres.

As mentioned in the introduction, thanks to Openfisca the IPP produced the first independent *ex ante* evaluation of the 2019 draft finance law, which was delivered and presented to the members of the Finance Committee before being taken up by the majority of the French media and in recent social protests (see figure 3). This newly acquired legitimacy can be partly attributed to the collaborative nature of Openfisca, and to the heterogeneity of the network that fuels it and has made it a sufficiently exhaustive resource to be taken seriously. However, it also derives from the interest of other actors—in particular governmental bodies, MPs, journalists, and citizens—in availing themselves of a resource that disturbs Bercy's monopoly on tax and welfare expertise.

```

151 openfisca_france/model/prelevements_obligatoires/impot_revenu/reductions_impot.py
@@ -2697,7 +2697,7 @@ class scelli(Variable):
2697 2697     label = u"Réduction d'impôt au titre des investissements locatifs - Dispositif Scellier"
2698 2698     reference = "http://bofip.impots.gouv.fr/bofip/4951-PGP"
2699 2699     definition_period = YEAR
2700 -     end = '2013-12-31'
2700 +     end = '2014-12-31'
2701 2701
2702 2702
2703 2703     def formula_2009_01_01(foyer_fiscal, period, parameters):
@@ -3006,6 +3006,155 @@ def formula_2013_01_01(foyer_fiscal, period, parameters):
3006 3006         f7gj + f7gk + f7gl + f7gp + f7gs + f7gt + f7gu + f7gv + f7gx + f7gw
3007 3007     )
3008 3008
3009 +     def formula_2014_01_01(self, simulation, period):
3010 +         ...
3011 +         Investissements locatif neufs : Dispositif Scellier
3012 +         2014
3013 +         ...
3014 +         f7fa = simulation.calculate('f7fa', period)
3015 +         f7fb = simulation.calculate('f7fb', period)
3016 +         f7fc = simulation.calculate('f7fc', period)
3017 +         f7fd = simulation.calculate('f7fd', period)
3018 +         f7gj = simulation.calculate('f7gj', period)

```

Figure 2. Updating legislation in the Openfisca code on the Github platform
 Source: screen capture from Github, <https://github.com/openfisca/openfisca-france>.



Figure 3: A graph produced by the IPP via Openfisca and used by activists and journalists.
 Description: On the left, a photo taken during a demonstration for climate justice in December 2018. On the right, a still from the “Arrêt sur image” television program on November 30, 2018. In both cases, we see a graph showing the inequalities caused by the Macron government’s reforms, taken from IPP research carried out using Openfisca.
 Source: www.arretsurimages.net/emissions/arret-sur-images/les-gilets-jaunes-ont-fait-apparaître-les-classes-populaires-dans-le-debat-public.

A different kind of digital commons? The institutional positioning test

The third test was more complex and remains unresolved to this day. It concerns the institutional positioning of this collective in relation to the state.

To date, there are few examples of free software—considered by some authors as digital commons⁷³—developed collaboratively by public actors, researchers, independent developers, and private companies. Historically, the open software movement has tended toward libertarianism, critical of information capitalism and the “neoliberal” state that legally underpins it.⁷⁴ Openfisca is therefore an unprecedented case: Launched as free software on the margins of the state, some of the tax information on which it is based was itself extracted from the state machinery, and its developer community is made up of heterogeneous public actors (civil servants, contract workers, trainees, researchers, etc.).

This dual positioning of the community, both inside and outside government, sometimes works to its advantage, as was the case in negotiating the two previous tests described above, but it also poses difficulties. For example, during a working meeting, one Etalab developer wondered:

If we speak on behalf of the state, then can we spend our time, as public servants, working with contributors who are trying to put a price tag on a political party’s manifesto, for example? (April 2018)

The positioning of Openfisca and its contributors also poses problems within the state itself, as one of the people in charge of the microsimulator at Etalab explains:

When you have the little prime minister logo on your business card, it gets you in almost everywhere, but it can also create blockages. For example, de Rugy [former president of the Assemblée nationale] wanted the committees to have control over the economic calculations and simulators so they could legislate without going through the Treasury Directorate General or Bercy. That was a window for Openfisca, but at the same time, that would be the executive (us) helping the legislature (the Assemblée nationale) to do without the senior civil service (Treasury DG) and the executive (Bercy) (Openfisca manager at Etalab, April 2018).

From 2016 onward, members of the community began to work on a categorization that would clarify the murky status of Openfisca within the institutional sphere. To put paid to this uncertain status, some actors recommended that Openfisca become a state-supported “digital commons.”

The term “digital commons” has gained currency in the activist and academic community since 2010 and is beginning to find its way into public discourse.⁷⁵ Verdier adopted the term, describing Openfisca as a typical example of a new kind of “commons” set up in collaboration with the state, one that, according to him, would transform the practices of government administrations opened up in this way to the forces of the “multitude.” Openfisca also allowed him to legitimate his actions as head of Etalab.⁷⁶ Shortly afterwards, Matti S., then in charge

⁷³ Charles M. Schweik and Robert C. English, *Internet Success. A Study of Open-Source Software Commons* (Cambridge, MA: MIT Press, 2012).

⁷⁴ Broca, *Utopie du logiciel libre*.

⁷⁵ See, for example, Xavier Berne, “François Hollande promet le partage des ‘biens communs numériques,’” September 21, 2016, <http://www.nextinpact.com/news/101475-francois-hollande-promet-partage-biens-communs-numeriques.htm>. Accessed December 13, 2017.

⁷⁶ That year, out of ten posts published on his blog, four mention Openfisca, which he also takes as an example in a book chapter prefaced by Emmanuel Macron (see Henri Verdier, “Une action publique ouverte à la contribution,” in Yann Algan and Thomas Cazenave, eds., *L’État en mode start-up* (Paris: Eyrolles, 2016), 59–70) and an article published the following year: Henri Verdier and Charles Murciano, “Les communs numériques, socle d’une nouvelle économie politique,” *Esprit* 5 (2017): 132–45.

of “mes-aides,” took over responsibility for Openfisca at Etalab. He too, but for different reasons, wished to make Openfisca “a true digital commons” (Matti S.). Openfisca thus took a new turn through the discourses of Verdier and Matti S. No longer just a microsimulator produced and maintained by the IPP, Etalab, and some departmental administrations, it was potentially to be one of the first examples of a state-supported “digital commons.”

However, as we shall see, this shared aim came up against differences of interpretation, which to date have prevented this test from being successfully negotiated in full. In 2016, Verdier already considered Openfisca a digital commons, whereas for Matti S., it was not yet there. During our interview with him, referring to Ostrom’s classic works, Matti S. argued that the governance of Openfisca is neither sufficiently clear nor sufficiently shared, and that the state plays too great a role in it, for it to qualify as a commons. In 2017, he therefore decided to create an association to shift its center of gravity outside of the civil service, so as to establish a neutral terrain for its governance. As theoretical support for this shift, he published a white paper on digital commons for public actors and particularly on how they should be managed.⁷⁷ The white paper states that digital commons cannot exist “without rules to establish shared governance.”⁷⁸ To adapt this to the unusual presence of state actors in the governance of a digital community, he proposes a distinction between the roles of contributor (such as the economists of the IPP and the Etalab developers), operator (in this case, the association that Matti S. wants to create), and legal and economic guarantor (the role that the state could take on).

However, Etalab’s management opposed this move, on the grounds that limiting the state’s role to that of a mere guarantor would be too restrictive. According to a former Etalab developer, the agency said:

“It means you’re really transferring power to the association . . . but it’s the state that’s paying.” That was a bit of a territorial issue. . . . And Mahdi replied, not directly, but still, his response was that, basically, Openfisca was not created by the state, but by economists. . . . But there was also the aspect of: We want to sell it to government departments, and that’s easier if it’s developed by Etalab than if we have to say it’s something made by an association that we don’t really control. That’s where the tensions arise (April 2018).

Here, then, we see tension arising over the role of the state in relation to Openfisca and its status in relation to other “digital commons.” This can be explained by several peculiarities of the project. On the one hand, the developer community’s affiliation with the state affords it an institutional legitimacy in relation to other parts of the government that it would perhaps lose were governance of the project to be taken over by an independent association. On the other hand, Openfisca’s funding is uncertain, and the state effectively pays most of the developers who are therefore dependent on it. Finally, the developers, although mostly service providers or contractors, are subject to the principle of the subordinacy of the civil service, which can contradict the principle of the self-government of the commons. On this last point, the jurist and activist Lionel Maurel explains:

If the state truly becomes a “contributor to the digital commons,” it will then also be necessary to define the “contributing public agent status,” which may call for some redefinition of the principle of subordination. . . . Moreover, this is also one of the indirect

⁷⁷ Matti Schneider, *Livre blanc. Construire des communs numériques* (Gitbook, 2017). Available online: <https://communs.mattischneider.fr/>.

⁷⁸ *Ibid.*

benefits to be expected from this approach: that by drawing closer to the commons, the state itself will be profoundly transformed.⁷⁹

This test remains unresolved, and further research will be required in order to document its outcome.

Conclusion

In the introduction, we asked how actors on the margins of the state had managed to make a legitimate shared resource out of tax and welfare information that was once the sole preserve of Bercy. We showed, on the one hand, that these actors had to carry out some substantial institutional labor and, on the other hand, that their heterogeneity proved to be a strength in carrying out this labor along with all the cumulative cognitive work that was necessary to build the resource. Finally, the desire to make Openfisca a digital commons, defined as a digital resource produced and maintained by a community according to its own rules of governance and characterized by a regime of shared ownership, called into question the porous boundaries of the state in a test that has not yet been resolved.

Firstly, we recalled that some of the literature explains the success of open data in terms of the conjunction of the growing importance of the principle of transparency and the almost natural facility with which digital tools fluidify the circulation of information and the opening up of public data. We then confirmed the results of earlier research that has emphasized the cognitive and practical labor demanded of certain agents, often out of sight, in order to open up non-sensitive public data.⁸⁰ However, our investigation seems to reveal another type of labor, an institutional labor, that has to be carried out when it comes to information with high symbolic, political, and legal value. Institutional labor is defined as an intentional action aimed at creating, maintaining, or destabilizing an institution. In the case of the opening up of the source code used to calculate taxes, this work took the concrete form of a lawsuit and legal reforms within the legal sphere, and campaigning by MPs, journalists, and digital activists in the public sphere. In the case of the opening up of the tax data, it took the form of more discreet administrative lobbying activity. This led to the destabilization of Bercy's institutional monopoly by making some of the tax and welfare data accessible.

Secondly, our research shows that the question of governance, although a subject of debate within the Openfisca project, is not, as we might have expected from the literature, the primary explanation for its early success. Our research shows that there were two more decisive factors at work: It was possible to build Openfisca thanks to the heterogeneous nature of the coalition that came together around it, and in particular the fact that some of its actors were situated on the margins of the administration, their collaboration facilitated by a digital system open to collaborative contributions. On the first point, some of Openfisca's founding institutions, such as Etalab and France Stratégie, were close enough to the government to obtain a certain legitimacy, to enlist insiders, to know the details of opaque tax and welfare information, and to have access to windows of opportunity such as the request from Ayrault. Other actors were far enough away from it to be able, for example, to take Bercy to court to access this information. It is also this heterogeneity of positions and authorities that made it possible to build and to

⁷⁹ Calimaq, "L'émergence de la figure d'un État 'contributeur aux Communs numériques,'" *S.I.Lex*, December 30, 2017, <http://scinfolex.com/2017/12/30/lemergence-de-la-figure-dun-etat-contributeur-aux-communs-numeriques/>.

⁸⁰ Denis, *Le travail invisible*.

continue enriching the resource through the aggregation of complementary contributions. This seems to us to be a central finding of our investigation: The task of creating a shared resource built on government information is facilitated if public and non-public actors, on the periphery of this government, enter into collaboration. A second point is that all of these practices could be aggregated around Openfisca thanks to the collaborative nature of this digital tool that was part of it from the beginning: an open license, a collaborative work platform and communication tools accessible online without restriction, and modular software pliant enough to accommodate different scripts (oriented toward an understanding of the law, research, and decision support).

However, as we have also seen, this unclear situation also led to a test of institutional qualification that has not yet been successfully negotiated. In closing, we would like to propose a hypothesis. Over the past two decades, several models of the state, i.e. configurations of the state, have been envisaged in the context of its digital modernization to make it more “open” and “democratic.”⁸¹ The idea of e-government has flourished,⁸² and more recently some have proposed the development of a “platform state.”⁸³ Openfisca seems to represent an institutional experiment that presents an alternative to these models. It has been led by the work of hackers on the margins of the state,⁸⁴ testing out a particular configuration of the state in relation to the digital commons. Yet, this configuration, played out at the sociotechnical, legal, and institutional levels, has not yet been stabilized. What role does the state play in the development of this original digital commons? Is it a partner, a guarantor, or an entirely separate participant in the governance of what could then be called a “public digital commons”? How does the pooling of public information redistribute knowledge/power relationships within and outside of the administration? Some doubt remains, and seems to point toward what Linhardt calls a state test: a test where the “state quality” of an arrangement such as Openfisca is uncertain and becomes an object of dispute.⁸⁵ In our view, this opens up stimulating perspectives for further research, which we have tried to indicate in this article, and more broadly in the context of a doctoral thesis.

A first limitation of our work lies in the tests we have had to set aside in the interests of clarity, namely the test of the economic sustainability of the project, which was often called into question, as well as that of the collaboration of heterogeneous actors who wish to develop the resource in divergent and sometimes antagonistic directions—something that has already led to the departure of some members. A second limitation of our research is that of any case study that takes a contemporary event as its object. Openfisca serves us here as an observatory, helping us grasp the still very recent tests undertaken in the construction of a new political and sociotechnical configuration—one that must be situated within a broader movement coming together around digital tools in order to make public information a commons and perhaps to transform the state. From this point on, we will need to continue our investigation with other case studies in order to confirm, invalidate, or deepen our hypotheses.

⁸¹ See, for example, Corinne Erhel and Michel Piron, “Rapport d’information sur l’évaluation de la modernisation numérique de l’État,” Comité d’évaluation et de contrôle des politiques publiques, Paris, Assemblée nationale, May 4, 2016.

⁸² Ari-Veikko Anttiroiko, *Electronic Government: Concepts, Methodologies, Tools, and Applications* (New York: Information Science Reference/IGI Global, 2008).

⁸³ Pierre Pezziardi and Henri Verdier, “Des ‘start-up d’État’ pour transformer en souplesse l’Administration,” *Le journal de l’École de Paris du management* 120 (2016): 22–29.

⁸⁴ Nicolas Auray, “Une enquête sur les institutions. Le hacker, l’État et la politique,” research supervisor’s dissertation, Université Nice Sophia-Antipolis, 2013.

⁸⁵ Dominique Linhardt, “Avant-propos: épreuves d’État. Une variation sur la définition wébérienne de l’État,” *Quaderni. Communication, technologies, pouvoir* 78 (2012): 5–22.