

Algorithms as Regulations: Considering Algorithms, when Used by the Public Administration for Decision-making, as Legal Norms in order to Guarantee the proper adoption of Administrative Decisions*

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ABSTRACT In this paper, it is argued that the algorithms used by the Public Administrations for the effective adoption of decisions must be considered administrative regulations from a legal point of view because they fulfil a function which is strictly equivalent to that of legal norms, i.e. to regulate and predetermine the action of the public powers. Additionally, it is studied which consequences can be deduced from this assumption in many areas: better regulation procedures for algorithms, complete publication of their code as it is legally binding for every norm and the necessity of legal remedies against algorithms. All these consequences, as stated in the text, represent a significant and necessary increase in relation with the current guarantees existing in our legal system regarding the use of AI by Public Administrations.

1. The Law and artificial intelligence

To say that the Law as the social instrument we know and in which we have been trained is being forced to undergo a very important transformation as a consequence of the advanced development of computer science and artificial intelligence is probably superfluous at this point. However, to understand and analyse to what extent these changes are forcing deep transformations in the way our Law works and how they affect some of its most basic conceptual and applicative structures is a task we cannot allow ourselves to neglect.

In this sense, and with respect to many issues, the fact of having at our disposal extraordinarily advanced computer tools as never before¹ entails not only quantitative changes but also some profound transformations, which we could consider qualitative or, better expressed, structural. These transformations affect the very

basis of the way in which we try to order the reality using legal norms and other legal instruments. It is therefore not only the fact that it is now possible to compute much more and much faster –and much cheaper too– than ever before, but also that, having these possibilities at our disposal, we will be able to use them to solve problems that we used to deal with from a different perspective because it was not possible –or efficient enough– to resort to answers based on calculation, probability or correlations. I tried to give an early account a few years ago of these fundamental changes and of the role that the Law must play in order to preserve equity and social justice, sometimes taking on a necessarily different role², as well as warning about the risks to equality which, under the guise of seeking greater efficiency, could result from the generalization of this decision-making model³.

1.1. Artificial intelligence and the precautionary principle

The key to all the aforementioned transformations is, as it has already been pointed out, the exponential increase in computing capacity associated with technological development and, along it, the possibility of mechanically performing increasingly complex operations, and also a bigger number of them, in

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¹ M. Tegmark, *Life 3.0. Being human in the age of Artificial Intelligence*, London, Penguin, 2017, 61-71.

² A. Boix Palop, *De McDonald's a Google: la ley ante la tercera revolución productiva*, in *Teoría y Derecho*, 1, 2007, 124-147.

³ A. Boix Palop, *De McDonald's a Google: la ley ante la tercera revolución productiva*, 141-145.

much less time. This increase is what will lead to the appearance, on a horizon that is still undetermined but clearly conceivable in its structural elements, of computational capacities that are substantially equivalent, at least in their results, to the way in which human beings process reality and transform it, by means of the decisions that we adopt when interacting with it. Specialists in the field may disagree on when this moment can be reached, with positions generally ranging from 30 to 70 years from now⁴, or on what characteristics this artificial intelligence might eventually have⁵, but not on that sooner or later, and with one set of features or another, this event will occur. Regardless of the basic questions –anthropological, cultural, religious, historical, even political– about what we might consider to identify or single out human beings in that context –Harari, 2015, has made a very interesting approach to this question⁶ which has generated, as it is well known, an interesting public debate–, in practical terms, for the purposes of managing such a powerful instrument in our hands, it is key to understand its consequences as well as possible.

Thus, our legal systems can only properly act on this new reality if they understand the implications of these new possibilities that will lead to the use of these tools for better identification of patterns, analysis of reality with a deeper insight and also to get some help in decision-making processes ... when not directly delegating decision-making in its entirety in algorithms and computational processes as long as they show to be better, more efficient and more capable than those taken by traditional human intelligences in gradually more areas⁷. To this end, it is quite assumed that from a strictly practical and functional point of view there are not too many differences between the way we know our brain works when making decisions and the way AI based on a succession of calculations and the instructions that indicate how to carry them out –the algorithms that make up the programming– operate⁸. Simply put, we are witnessing a gradual replacement as artificial intelligence becomes more and more capable of matching and then overcoming human intelligence. This already ongoing process of replacement will be further and further, reaching more and more different human activities⁹, and it

will also reach most of legal activities.

One of the major questions related to this point, at least in the medium and long term, will be that of controlling these new forms of intelligence and how, using not only the available technology but also the Law, try to frame their development in order to avoid future problems –which may be many and varied, in the opinion of almost all specialists in the field–. Assuming the forecast that overcoming human intelligence in more and more activities is only a matter of time, understanding the functioning of the algorithms and programs from which the new “super-intelligence” of the future will function is essential to aspire to its control or, at least, its proper framing¹⁰. This framework must not only be based on this deep understanding of the technological mechanisms on which its operation is based, but also on a proper and socially shared identification of the final goals of the regulation, the values to which it would have to pay attention and the implications of regulating future artificial intelligences to pursue some objectives instead of others. Therefore, in view of this new third technological and productive revolution, the role of the law must be totally consistent with this need to establish objectives and purposes and try, from there, to reorient the operation of these instruments¹¹.

This work, in addition to being technical in relation to the way these intelligences are programmed, is also legal, if not essentially legal. In this sense, for example, the important Asilomar Conference that brought together the most important specialists in artificial intelligence in the world in 2017¹² established a series of criteria that give a lot of importance to this predetermination of objectives as an essential element¹³, although most probably not enough in itself, to avoid possible problems (even the most critical analyses agree on the need to anchor any possible regulation in this clear predetermination of objectives¹⁴). Together with this idea, another regulatory vector which appears systematically both in this document and in other guidelines with a normative vocation

Intelligence, 49-55.

¹⁰ N. Bostron, *Superintelligence. Paths, Dangers, Strategies*, 143-144.

¹¹ A. Boix Palop, *De McDonald's a Google: la ley ante la tercera revolución productiva*, 145.

¹² M. Tegmark, *Life 3.0. Being human in the age of Artificial Intelligence*, 329-332.

¹³ *Asilomar Conference Principles*, 2017 (on-line at: <https://futureoflife.org/ai-principles/?cn-reloaded=1>; last access: 01/08/2020).

¹⁴ F. Schmiedchen and alii, *Informe sobre los principios Asilomar en Inteligencia Artificial*, Grupo de Estudio Evaluación de la Tecnología de la Digitalización de la Federación de Científicos Alemanes (VDW), 2018, 17-23 and 30-33.

⁴ N. Bostron, *Superintelligence. Paths, Dangers, Strategies*, Oxford, Oxford University Press, 2014, 18-21.

⁵ M. Tegmark, *Life 3.0. Being human in the age of Artificial Intelligence*, 49-55.

⁶ Y. N. Harari, *Homo Deus. A Brief History of Tomorrow*, London, Harvill Secker, 2016.

⁷ W. Hoffmann-Riem, *Big data. Desafíos también para el Derecho*, Madrid, Editorial Civitas, 2018, 59-62.

⁸ N. Bostron, *Superintelligence. Paths, Dangers, Strategies*, 23-30.

⁹ M. Tegmark, *Life 3.0. Being human in the age of Artificial*

approved in recent years¹⁵, coincide in the need to try to embrace as far as possible –if at all possible– the possible undesired or sometimes not even initially foreseen consequences of the use of artificial intelligence¹⁶. This is a sort of translation into the computer and intelligence environment of the traditional legal principle of precaution¹⁷, which we have legally declared to be a key instrument for risk management, and which Ulrich Beck naturally projects on law¹⁸. Now, it seems to be the proper path to widely project it on the management of the risk caused by the increasingly autonomous and correlated difficulties to control algorithms by both strictly technological and legal means¹⁹, especially when they are used for the adoption of decisions with the capacity to impose themselves coercively on citizens²⁰.

This transfer to this new environment, however, presents different profiles, given the magnitude of the risk in question, which can have extinctive consequences for humans, and the irreversibility of the loss of control over these intelligences from a certain point in the process. It may therefore be necessary not only to address the precautionary principle in its most traditional decline, but to go beyond it and integrate the very notion of precaution into a more radical formulation adapted to all the needs and requirements of the new environment. This is probably the most important transformation the Law will have to face in the future, which we should bear in mind with regard to any regulation affecting these matters, both where private actors and the public sector itself are involved. This is a challenge that will also be the task of global

Law, a collective responsibility by definition that should permeate the approach to this phenomenon in all cases, but its study exceeds the ambition of this work, which aims to analyse short-term effects regarding our legal systems and therefore has to focus on how to apply existing law. It so happens, however, that some of the lessons drawn from this need for prudence in dealing with the phenomenon will have to be taken into account for the latter issue as well. Thus, for example, any treatment of the legal framework of algorithmic decisions taken by public authorities, as a particularly extreme example of this ability to impose coercive measures on citizens, must be dealt with an extreme precaution that may even justify possible short-term losses in efficiency.

1.2. From the Law as formal abstract rationalization and its deductive application to the identification of patterns, correlations and inductive application leaps associated to AI

With respect to the Law itself, and focusing on some of the more immediate consequences of this technological transformation, the artificial intelligence available today, although still incipient and inferior to human intelligence as a whole, has already changed some of the structural elements of how we understand and apply legal rules. The increase in computing capacity has allowed in more and more areas a gradual abandonment of traditional formal rationality, based on the logic of deductive subsumption that applies previous abstract rules that sought to order and schematise reality, by an increasing use of Boolean correlations and data searches used to estimate, by means of probabilistic inductions, the most adapted solution to each case or the most precise evaluation of the situation. The change is not a minor one, because we change the way we reach conclusions or decisions about the best possible outcome, which is decided not by subsuming it into a previously established category but by trying to identify its concrete and individualised value²¹.

Until now, and insofar as the use of algorithms or programs had been used mainly to carry out very predetermined mechanical operations of calculation and computation, the result of which was easy to foresee and where the use of the algorithm was indeed simple to understand –what we can label as *automatization systems*²²–, the problem had been avoided. To a

¹⁵ Consultative Committee of the Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data, *Report on Artificial Intelligence. Artificial Intelligence and Data Protection: Challenges and Possible Remedies*, 2018; European Commission, *Inteligencia artificial para Europa. Comunicación de la Comisión al Parlamento Europeo, al Consejo Europeo, al Comité Económico y Social Europeo y al Comité de las Regiones*, COM(2018) 237 final, 2018; European Parliament, *A governance framework for algorithmic accountability and transparency*, 2019.

¹⁶ F. Schmiedchen et alii, *Informe sobre los principios Asilomar*, en *Inteligencia Artificial*, 1-3 and 33-34.

¹⁷ L. Cotino Hueso, *Riesgos e impactos del Big Data, la inteligencia artificial y la robótica: enfoques, modelos y principios de la respuesta del derecho*, in *Revista General de Derecho Administrativo*, 50, 2019, 27-28.

¹⁸ U. Beck, *Risikogesellschaft. Auf dem Weg in eine andere Moderne*, Berlin, Suhrkamp, 1986.

¹⁹ K. Yeung, *Why Worry about Decision-Making by Machine?*, in *Algorithmic Regulation*, K. Yeung and M. Lodge (eds.), Oxford, Oxford University Press, 2019, 21-48.

²⁰ M. U. Scherer, *Regulating artificial intelligence systems: Risks, challenges, competencies, and strategies*, in *Harvard Journal of Law and Technology*, 2016, 29(2), 353-400; P. Daly, *Artificial Administration: Administrative Law in the Age of Machines*, SSRN Working Paper, 2019.

²¹ A. Boix Palop, *De McDonald's a Google: la ley ante la tercera revolución productiva*, 130-134.

²² M. Veale and I. Brass, *Administration by Algorithm? Public Management meets Public Sector Machine Learning*, in *Algorithmic Regulation*, K. Yeung and M. Lodge (eds.), Oxford, Oxford University Press, 2019, 123-125.

certain extent, it could be understood that the contribution of computing and artificial intelligence in these cases was merely instrumental and mechanical, and therefore legally not relevant while we are in what can be called mere *robotic automation*²³. There is no legal difference between writing a resolution on a typewriter or doing it by means of a word processing software, for instance. To the extent that the contribution of the computer and the algorithms used is merely instrumental, however much improvement this may be, this conclusion is easy to endorse. The fact that the operations or calculations required internally to process the work are carried out quickly and efficiently by a machine or have to be made by laborious and slow human work only entails an improvement in efficiency. There are no difficulties in understanding the operation carried out by the machine. Furthermore, the decision is independent in any way on the technology used to make these calculations or instrumental operations, neither could be altered by them.

A large part of the uses of artificial intelligence that are still being made by our public administrations, moreover, still fall into this category²⁴. Even uses that require more complex calculations and greater programming based on probabilities and correlations have not yet completely abandoned *ex ante*²⁵, unlike what is already possible with technology and therefore a future and foreseeable possibility²⁶.

We know that because of the better performance of certain calculations and algorithms, the above mentioned rationalist deductive paradigm it has been surpassed, due to considerations of efficiency, by the use of probabilistic calculation and algorithmic inferences, in whose solutions legal operators are gradually relying more and more, even by counter-intuitive that may sometimes be, as they demonstrate greater efficiency in their practical

results²⁷. Thus, we are witnessing a progressive substitution in typical assessment or decision-making environments, ranging from tools for the detection of tumors to the determination of the best route to reach a destination. In all of them, the use of algorithms is displacing, because they are more efficient, human decisions – augmentation systems²⁸– thanks to the development of cognitive automation or, directly, of artificial intelligence in its maximum expression²⁹. As we begin to accept this role from the law, we must assume that the traditional rules of the game are also changing and that the role of public law in the future, when framing these decisions, may have to take into account elements that were not so relevant until now. In fact, in some legal realms –for instance, the assessing of evidences in some countries, notably the United States– we are already beginning to be close to this paradigm shift³⁰.

Given this evolution, the Law, and particularly Public law, is facing a situation where it is foreseeable that discretionary decisions will soon part of this trend. In cases where an assessment must be made by public authorities regarding the concurrence or not of certain circumstances or elements, or where an evaluation must be made regarding the final weighting very disparate considerations, qualitative gain will be even greater. In other words, even those decisions that even today our legal systems assume to be, in the end, typically human decisions, are up to being adopted by algorithms and AI. And this is precisely why is essential to face up to how we regulate the integration of artificial intelligence with respect to the administrative action and administrative decisions.

1.3. Preliminary reflections on the consequences of the use of artificial intelligence for decision-making in administrative procedures

As aforesaid, where the use of artificial

²³ J. Valero Torrijos, *Las garantías jurídicas de la inteligencia artificial en la actividad administrativa desde la perspectiva de la Buena administración*, in *Revista Catalana de Dret Públic*, 58, 2019, 85.

²⁴ C. Ramió Matas, *Inteligencia artificial y administración pública. Robots y humanos compartiendo el servicio público*, Madrid, Los Libros de La Catarata, 2019, 13-21 and 61-67; A. Cerrillo i Martínez, *El impacto de la inteligencia artificial en el derecho administrativo, ¿nuevos conceptos para nuevas realidades técnicas?*, in *Revista General de Derecho Administrativo*, 50, 2019, 8-10; A. Cerrillo i Martínez, *Com obrir les caixes negres de les Administracions públiques? Transparència i rendició de comptes en l'ús d'algoritmes*, in *Revista Catalana de Dret Públic*, 58, 2019, 18-20.

²⁵ C. Coglianese and D. Lehr, *Regulating by Robot: Administrative Decision Making in the Machine Learning Era*, in *Penn Faculty Scholarship*, 1734, 2017, 1160-1176.

²⁶ W. Hoffmann-Riem, *Big data. Desafíos también para el Derecho*, 63-66.

²⁷ M. U. Scherer, *Regulating artificial intelligence systems: Risks, challenges, competencies, and strategies*; C. O'Neil, *Weapons of Math Destruction*, Allen Lane, 2016, 84-91; T. Zarsky, *The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making*, in *Science, Technology and Human Values*, 41(1), 2016, 118-132; T. Scantamburlo, A. Charlesworth, and N. Cristiniani, *Machine Decisions and Human Consequences*, in *Algorithmic Regulation*, K. Yeung and M. Lodge (eds.), Oxford, Oxford University Press, 2019, 58-68.

²⁸ M. Veale and I. Brass, *Administration by Algorithm? Public Management meets Public Sector Machine Learning*, 125-127.

²⁹ J. Valero Torrijos, *Las garantías jurídicas de la inteligencia artificial en la actividad administrativa desde la perspectiva de la Buena administración*, 85.

³⁰ J. Nieva Fenoll, *Inteligencia artificial y proceso judicial*, Madrid, Marcial Pons, 2018, 26-28 and 105-115.

intelligence affects calculations and programming that allow a great deal of formalization/rationalization *ex ante* with legal certainty and great possibilities of strict and exact predetermination, the problems are much smaller. In those cases the Weberian paradigm of formal rationalisation on which our traditional law is based³¹ continues to function without problems. Thus, the increase in computing capacity allows for many more calculations to be made than in the past. These calculations are also going to be faster, with much lower costs, safer and less susceptible to error. In those cases, there are no substantial risks of altering the final solution. A solution, moreover, that is very easily pre-determined from the classic normative instruments available to us, as well as easily traceable and apprehensible by any external review. The way in which Public law has to deal with these improvements is simple and does not differ much from the results of having better calculators, word processors software or improved traffic lights: making sure that this machines make the calculations we want, and that they carry them out according to the planned schedule, respecting pre-set objectives, the matter is solved to full satisfaction.

On the other hand, the issue with regard to legal environments where the increase in calculation capacity allows for a better identification of situations, causes or possible solutions is qualitatively different. In these cases the gains in efficiency are closely related to the better ability to, using AI tools, make assessments of reality, or adopt decisions, that differ from those that would have been, or are generally adopted, by human beings. Moreover, these outcomes are not necessarily susceptible to being easily anticipated or foreseen by normative and regulatory instruments. As a matter of fact, in those cases the gain is qualitative *precisely* for this reason. But this is also the element that multiplies the difficulties in accepting or framing the use of those instruments from a legal point of view. Because in these cases the traditional rules of the game, the *ex ante* formal rationalisation and the supposed predictability of traditional law—supposed because in the end it also depended enormously on the human applicator, but the system was conceptually based on this assumption—become notably blurred.

Obviously, this question would be no more than a purely theoretical concern if we were not already perfectly aware that this greater effectiveness is occurring, and increasingly so, in environments where the management of uncertainty and the assessment of many and very

complex variables is essential for a better identification of the most appropriate solutions. Indeed, we already know that it is precisely in these environments, such as with increasingly complex types of diagnostics in medicine, where more improvements can be seen thanks to the modern capabilities of artificial intelligence.

Something similar will undoubtedly occur in more and more areas of the law. Furthermore, in these environments the *ex ante* predictability derived from programming, both legal and algorithmic, is greatly reduced compared to what we were used to, among other things because of the well-known “black box” effects of the operation of this type of software and AI solutions³² which, from a certain point onwards, even prevent their programmers from reliably pre-determining the concrete results that the set of algorithms will offer once it is run. In such a case, we are forced to blindly rely to a certain extent on the correction of these results, which depends on trusting that the algorithm that determines them is done correctly³³. This effect has to do with the functioning of complex artificial intelligence systems, which depend not only on very complex probabilistic operations and inferences—which, to a certain extent, and even with enormous costs, could be calculated and checked by human intelligences, if it were considered prudent to do so—but also on a type of programming based on *machine learning* systems that allows a gradual evolution of the AI itself and of the solutions that it declines³⁴. The more complex the programming is, the greater the calculation capacity and bigger the involved network effects are, more concerning *black box effects* will be present³⁵. In these environments, *ex ante* unpredictability increases, as is logical, exponentially, with all that this implies for Public law, traditionally based on paradigms of strict normative predetermination. That is why the mechanisms of control and framing of these processes inevitably emerge as the great issue of our time, also from a legal perspective³⁶.

³² H.W. Liu, C.F. Lin LIN and Y.J. Chen, *Beyond State v. Loomis: artificial intelligence, government algorithmization and accountability*, in *International Journal of Law and Information Technology*, 27(2), 2019, 134-136.

³³ A. Cerrillo i Martínez, *El impacto de la inteligencia artificial en el derecho administrativo, ¿nuevos conceptos para nuevas realidades técnicas?*, 17-20; W. Hoffmann-Riem, *Big data. Desafíos también para el Derecho*, 61-62.

³⁴ C. Coglianese and D. Lehr, *Regulating by Robot: Administrative Decision Making in the Machine Learning Era*, 1156-1160; P. Daly, *Artificial Administration: Administrative Law in the Age of Machines*, 7; T. Scantamburlo, A. Charlesworth and N. Cristiniani, *Machine Decisions and Human Consequences*, 53-55.

³⁵ N. Bostron, *Superintelligence. Paths, Dangers, Strategies*, 48-50.

³⁶ K. Yeung and M. Lodge, *Algorithmic regulation. An Introduction*, in *Algorithmic Regulation*, K. Yeung and M. Lodge (eds.), Oxford, Oxford University Press, 2019, 12-13.

³¹ A. Boix-Palop, *De McDonald's a Google: la ley ante la tercera revolución productiva*, 128; M. Veale and I. Brass, *Administration by Algorithm? Public Management meets Public Sector Machine Learning*, 125.

These are the cases that raise the most questions and need for the evolution of our rights and legal guarantees, which for the moment being we have not. In fact, in the face of this situation, the initial reaction of our legal systems has been to try to avoid the effective existence of this second type of situation, which does represent a qualitative change and consequently obliges us to reconsider our legal response, and continue to operate as if it did not exist: If we analyse the regulatory response given to date in almost all cases and countries, at least until today, it is limited to regulating the situation assuming that increases in computational capacity simply make the tool used for calculation purposes more powerful and little else –i.e., a mere increase in simple *robotic automation*³⁷, *automatization systems*³⁸–, so that for the time being they do not foresee either complex regulatory responses against the other possible consequences, those related to cognitive automation and artificial intelligence³⁹ that lead us to the environments of what can be called *augmentation systems*⁴⁰. In some cases, it has even been decided, perhaps more frankly, to prohibit the use of these means and AI solutions, at least for the time being. This is for instance what German Public law has done. Its legislation on administrative procedure –in particular §35 VwVfG– has introduced a ban on the use of algorithms for decisions affecting citizens’ rights that may have a discretionary content⁴¹. Problem solved, then, at least until the temptation of using those tools because of their better efficiency overcome any kind of reluctance. In other countries, such as Spain, some scholars have also proposed an interpretation of their legal systems in line with this German prohibitive rule for administrative decisions with an important discretionary content⁴², which, by the way, may

be well aligned with the abovementioned precautionary principle in those matters.

The problem with this approach is that, as it results, this is only a viable solution in the short term, because, as has already been said, greatest qualitative gains derived from the use of AI and algorithms dedicated to decision-making are likely to be achieved precisely by using artificial intelligence in that kind environments or for those decisions with some degree of administrative discretion and affecting citizens’ rights. Therefore, such a ban is not expected to be a sustainable regulatory solution in the medium and long term.

In any case, there are reasons of comfort that explain why these approaches –avoid the subject as a non-issue or simply banning the use of AI in those cases– are tempting. Among others, they allow the State and the public authorities not to have to face an uncomfortable reality, full of uncertainties. They also help to delay regulatory intervention which, in order to be carried out satisfactorily and matching technological developments, requires knowledge and control over these advances which, very probably, at this point in time, is no longer within the hands of public authorities. This situation makes public action extremely difficult. It also enhances the temptation to leave the question of effective regulation of certain of the problems that may arise in the hands of those who are confident of self-regulation, or in the market or in technological development itself, which it would better not to curb neither to control and then it would be capable of solving the problems on its own. Moreover, it is always possible to seek legal justifications for such a way of working –or such a way of *no working*–, the most common being to argue that even if AI tools are being used, in the end the decision is *still* legally considered to have been adopted by a human being or a traditional administrative decision-making body, notwithstanding the use of whatsoever assessment and support instruments.

However, sooner or later, Public law will have to assume that this new reality, even with its uncertainties, imposes a legal response in line with the importance of this paradigm shift. A response that must be able to assume that the role of Law in the technological environment, but also in the social and economic environment, derived from the third productive revolution is in some essential aspects very different from the position of legal systems in which all contemporary jurists have been instructed, very much linked to the mental schemes of formal rationalisation and deductive logic that aspired to always operate on the basis of predefined –that is, programmed– normative certainties.

Obviously, these certainties did not always mean that the system would work properly –

³⁷ J. Valero Torrijos, *Las garantías jurídicas de la inteligencia artificial en la actividad administrativa desde la perspectiva de la Buena administración*, 85.

³⁸ M. Veale and I. Brass, *Administration by Algorithm? Public Management meets Public Sector Machine Learning*, 123-125.

³⁹ J. Valero Torrijos, *Las garantías jurídicas de la inteligencia artificial en la actividad administrativa desde la perspectiva de la Buena administración*, 85.

⁴⁰ M. Veale and I. Brass, *Administration by Algorithm? Public Management meets Public Sector Machine Learning*, 125-127.

⁴¹ M. Martini and D. Nink, *Wenn Maschinenentscheiden... Persönlichkeitsschutz in vollautomatisierten Verwaltungsverfahren*, in *NVwZ*, vol. 10, 2017, 681-682; T. Siegel, *Automatisierung des Verwaltungsverfahrens – zugleich eine Anmerkung zu §§35a, 24 I 3, 41 IIa VwVfG*, in *DVBj*, vol. 1, 2017, 24-28; G. Manuel Díaz González, *Algoritmos y actuación policial: la policía predictiva*, A. Huergo Lora (dir.), *La regulación de los algoritmos*, Madrid, Thomson-Reuters Aranzadi, 2020, 195-216.

⁴² I. Martín Delgado, *Naturaleza, concepto y régimen jurídico de la actuación administrativa automatizada*, in *Revista de Administración Pública*, 180, 2009, 371.

convictions of innocent people or acquittals of guilty people could occur, for example— but this was due to application problems, a consequence of the lack of correction and knowledge attributable to the applicators, not to structural problems of the legal system, where a guilty person would always have to be, in the abstract, convicted, while an innocent person would always have to be acquitted. The gradual acceptance of mechanisms for analysing reality and making probabilistic decisions works on the basis of completely different legal parameters. For example, convictions or acquittals depend on the establishment of a threshold of certainty above which a sufficiently effective system of calculating probabilities of guilt in which we have sufficient confidence will allow us to decide that there must be conviction or acquittal depending on the case. This way of working is totally different from the traditional principle of presumption of innocence, since quantifying which threshold of probability is assumed to be acceptable in order to convict someone inevitable and structurally *assumes* and *implies* that some amount of innocent people is to be convicted as an established outcome of the system. If, moreover, the threshold is not very demanding (for instance, that may be the case if it tends to be set at a 90% probability, as it seems the case⁴³), then our legal system moves from a theoretical approach that states that only those who beyond all reasonable doubt are guilty are condemned to a model, again theoretical but with very real implications, that assumes in probabilistic terms as normal, convenient or efficient—in short, sufficiently satisfactory—a 10% conviction rate of not guilty individuals. These new paradigms and parameters will even affect the treatment that our legal systems make and have made of “not law”, that is, the areas of non-compliance and its differential social benefits: environments where the law allows, even though with risks and costs for doing so, non-compliance, work in a totally different way than automated environments that make non-compliance simply impossible.

Public law will have to respond to these new problems, and no doubt to many more, perhaps by renouncing, most probably, to a good part of its traditional conceptual framework. But the establishment of objectives and principles, the identification of the goals pursued and the decantation of the most appropriate solutions to achieve them will continue to be a purely legal task. To this end, and this is what this paper defends, for the sake of consistency with certain basic legal postulates but also because of the necessity of the precaution mentioned above,

Public law, and in particular Administrative law, will have to face this task. In order to do so, in the first place, they have to affirm the legal pre-eminence, both for the required predetermination and also for the subsequent application of the rules to the specific case, that the algorithms and the programs and models that they comprise and the source code in which they are written⁴⁴ form the essential part of a new normative framework, altogether with traditional legal rules. Computer code, in the end, also acts—and results in practice when used to make administrative decisions—as a legal code from the moment it forms part of the rules that predetermine the legal consequences that our legal system establishes and foresees. Therefore, our Public law must treat AI algorithms as such, i.e. as norms: thus, when used to reach administrative decisions, as administrative regulations. This is far from being the case to date. The rest of this paper will try to explain why begin doing so will be the best solution to encompass in the short run technological progress with the basis and guarantees of our legal systems.

2. Legal codification and source code: the insufficiency of current legal guarantees associated to the use of AI

If we assume, as I have already explained we should do, that the source code that we integrate in the adoption of administrative decisions has material normative value, given that these algorithms and programs are used as elements that help to determine the concurrence or not of certain factual circumstances or that establish the convenience or not of associating certain legal consequences with the available facts, it is inevitable to deduce from that some important legal consequences. Consequences that have to do with this *de facto* effects, which cannot be ignored... and for which our legal system has decided on solutions over many years for its correct framing. So, however new some of the consequences of the use of artificial intelligence by our public administrations may be, and however much structural changes in our Law must be made to accommodate these changes, problems related to their effective impact on citizens' rights are bound to be solved in a substantially the same way as we have traditionally dealt with them. This is, for instance, what happens with the guarantees of citizens against the powers and possibilities of action of the public authorities that may affect them. When this action is algorithmic, as it cannot be otherwise, all the constitutional principles that govern how the public authorities should act when the administration acts by

⁴³ J. Nieva Fenoll, *Inteligencia artificial y proceso judicial*, 214.

⁴⁴ C. O'Neil, *Weapons of Math Destruction*, 29-31.

traditional means will be equally projected⁴⁵: in particular, the requirement that citizens should have the capacity to know the consequences of their actions and what the normative pre-arrangement that allows public authorities to operate is, does not seem to be questioned simply by a change of the normative tools used by public powers or administrative authorities. Nor does this introduce substantial changes with respect to the agreement on the importance of the legal system providing sufficient guarantees, so that citizens can be protected against the action of state powers, including the right that they have to be able to know and understand this exercise of power, as well as to control and to monitor it, in order to verify that it is not arbitrary and to have the possibility to seek proper remedies in case it is.

All these issues, when they refer to the necessary determination of guidelines for the incorporation of algorithms and Ai in decision-making processes, must not be addressed solely by means of guidelines of good public governance, as it is customary to reiterate, even though their importance and necessity is stressed by our doctrine⁴⁶, but also require a strict normative legal framework consistent with these constitutional considerations and principles. Let us try to thread, then, which are the consequences we believe are deduced from those requirements.

2.1. Code 2.0

To state that the algorithms and programs that they comprise, when used by the public authorities to evaluate situations from which the application of legal consequences will later be deduced or, directly, when used to determine this from the concurrence or not of certain conditions or facts, behave materially like legal norms, is not something strictly new nor particularly disruptive from a theoretical perspective. In Kelsenian terms, which pointed out early on that legal rules are normative whatever form they take if they fulfil a materially normative function, i.e. prescribing or authorising a certain behaviour⁴⁷, there is little doubt about this – although, in his case, he was simply posing this normative character whatever the grammatical form used, since the possible codifications available at that time were merely grammatical⁴⁸-. More recently, in one of the first

works that dealt in a modern and global way with the enormous legal significance of the changes that the new technologies were going to bring us, the first edition of *Code*⁴⁹, advance a reflection that time has only confirmed: we are already in a society in which the true scope of citizens' rights is going to depend more and more on the programming codes from which all types of computer applications are based than on the very traditional legal codes that we jurists venerate so much⁵⁰. The statement may seem exaggerated – or perhaps it may seem exaggerated for the moment, not anymore– but it points in an interesting direction: the programming of tasks, by definition automated, of greater or lesser complexity, is an element inherent to the use of currently available technologies that, moreover, is destined to become more so in the future. That regulation by means of source code will be increasingly frequent is already an indisputable fact⁵¹. In fact, source code seems not only to be more frequent, but to be, and it is important to keep this in mind, the most relevant part of the administrative regulation, and also to administrative action, in the future.

To paraphrase Lessig, who expressed it in a slightly different way, it could be said that the source code with which the algorithms that evaluate more and more circumstances and decide more and more legal consequences, being part of the tools that the Law uses to respond to and order social reality, is also legal code, but in a new and more advanced version: a kind of *legal code 2.0*, which the Law must assume as such and whose regulation has therefore to be made from the full assumption that the regulation and concretion of the actual sphere of rights and freedoms of each citizen passes increasingly in practice through what is determined by this *code 2.0* rather than through the old provisions of the legal codes and traditional declarations of rights⁵². Surprisingly, it has been less frequent to draw from these premises the direct conclusion that would seem inevitable: if source code and algorithms are going to increasingly fulfil the functions of effective pre-ordering of the legal evaluation of circumstances and facts, as well as determine and compute the elements and factors that lead to an actual legal response, should we not apply the same rules and standards of action and legal framework, or at least the same principles regarding how these programming and pre-determination of response operations should

⁴⁵ A. Cerrillo i Martínez, *El impacto de la inteligencia artificial en el derecho administrativo, ¿nuevos conceptos para nuevas realidades técnicas?*, 13-14.

⁴⁶ M. Veale and I. Brass, *Administration by Algorithm? Public Management meets Public Sector Machine Learning*, 128-132.

⁴⁷ H. Kelsen, *Teoría pura del Derecho*, Buenos Aires, Eudeba, 1960, 38.

⁴⁸ H. Kelsen, *Teoría pura del Derecho*, 39.

⁴⁹ Also, L. Lessig, *Code version 2.0*, New York, Basic books, 2006.

⁵⁰ L. Lessig, *Code version 2.0*, 6-7.

⁵¹ L. Lessig, *Code version 2.0*, 81-82; K. Yeung, *Algorithmic regulation: a critical interrogation*, in *Regulation and Governance*, 12(4), 2017, 505-523.

⁵² K. Yeung, *Algorithmic regulation: a critical interrogation*, in *Regulation and Governance*, 505-523.

be carried out with guarantees, to these new instruments that we used for those who traditionally did this same work as *legal code 1.0*?

In this sense, the functions fulfilled by traditional regulations used by the public administration and new algorithms, when used to assess the circumstances of the case or to determine what the appropriate legal response should be, are substantially equivalent. Regulations, like any written rule that predetermines executive activity, are unique precisely because of their normative nature, because they participate and innovate in the formation of the legal system⁵³. It is a universal phenomenon to any exercise of executive power precisely because it shares this feature⁵⁴, which is what differentiates it in nature from other administrative powers, such as that of pure execution through administrative acts⁵⁵. This capacity to codify, and the normative effectiveness that derives from it, has not only external effects, but also internal ones, since the approved programming, both legal and technological, to frame how Public administration acts should also be linked, and in the first place, to itself⁵⁶.

From this observation, it is clear that we must differentiate between what certain algorithms do, or what the public administration uses certain programmes for in each case, in order to identify the necessary differences between some cases and others. Maybe not all of them, but certainly every algorithmic tool used to make administrative assessments or decisions⁵⁷. In this respect, a surprising identity can be observed with legal categories that are already very much favoured by the traditional response of our Law when action was predetermined by traditional regulatory standards. Thus, and for example, we have always distinguished between the level of guarantees and legal formalisation required between instructions or rules being indications of non-obligatory compliance –for example, administrative precedent and certain *soft forms*

of normative pre-ordering, as service instructions or equivalent instruments in their traditional versions– and those that were necessary for those that were materially normative –hence gradually, for example, and above all if materially they are the element that predetermine the decision, we have been demanding that when this is the case instruments such as service instructions should be subject to the rules and guarantees of the regulatory norms⁵⁸–. Administrative law in the European tradition also differentiates between how the regulations have to proceed when setting the premises that allow for the actions of the Administration and how to proceed with the delimitation of the nuclei of certainty and spheres of uncertainty regarding the possible indeterminate legal concepts that may appear in these cases, or uncertainty as to whether or not an event has occurred, and the rules that regulate the discretionary decision of the Administration, which establishes *de facto* consequences –which are usually legally framed by the establishment of principles, values and objectives to which the decision must respond–.

It is obvious, therefore, that the same response should not be given to every case and every particular use of algorithms within administrative activity. An algorithm used solely to support the decision-making of whether or not a fact that triggers a legal response has occurred is not the same as another that may completely determine, by weighing in a computerized way very disparate elements and date throughout established correlations that are considered relevant, the legal response to be given by the public authority. But it is also evident that we have already very well-defined legal categories in our Administrative law tradition that help us to differentiate these different uses, and that each of them has very consolidated rules and guarantees on how, in each case, these responses should be programmed. In fact, the idea that with respect to different types of regulations there has to be different legal requirements according to the diverse functions they fulfil is, at this point, unquestionable in almost every modern legal system⁵⁹. This possible diversity in functions and material effects therefore does not contradict the relevant provisional conclusion already reached: that the algorithms used by the public administration in a not purely instrumental way do produce the same effects as any regulation, by pre-ordering the final decision of the public

⁵³ E. García de Enterría and T.R. Fernández, *Curso de Derecho Administrativo*, I, Madrid, Editorial Civitas-Thomson Reuters, 2013, 207.

⁵⁴ S. Muñoz Machado, *Tratado de Derecho Administrativo y Derecho Público General*, Madrid, Editorial Iustel, 2006, 851-855.

⁵⁵ S. Muñoz Machado, *Tratado de Derecho Administrativo y Derecho Público General*, 856.

⁵⁶ J. L. Carro Fernández-Valmayor, *Reglamento*, in *Diccionario de Derecho Administrativo*, S. Muñoz Machado (dir.), Madrid, Editorial Iustel, 2005, 2150-2151.

⁵⁷ A.G. Orofino and R.G. Orofino, *L'automazione amministrativa: imputazione e responsabilità*, in *Giornale di diritto amministrativo*, 2005, 1300-1311; A. Huergo Lora, *Una aproximación a los algoritmos desde el Derecho administrativo*, in *La regulación de los algoritmos*, A. Huergo Lora (Dir.), Madrid, Thomson-Reuters Aranzadi, 2020, 64-67.

⁵⁸ A. Gallego Anabitarte, *Ley y reglamento en el Derecho público occidental*, Instituto de Estudios Administrativos, 1971, 81; J. V. Morote Sarrión, *Las circulares normativas de la Administración pública*, València, Tirant lo Blanch, 2002, 170-182 and 223-225.

⁵⁹ J. M. Baño León, *Los límites constitucionales de la potestad reglamentaria*, Madrid, Editorial Civitas, 1991, 203-206.

authority and limiting the scope of discretion or capacity of determination thanks to the postulates contained in the source code. Therefore, they are not only *code 2.0*, but also, more specifically, plain and simple regulations from a pure legal sense. Thus, they must be treated as such by the Law when regulating how they are produced, how they are applied and the guarantees surrounding these processes⁶⁰.

Thanks to this identity of reason, we already have an important previous legal background that we can copy to regulate algorithms when they are used by the Public Administration with functions of predetermination and normative programming. Because if the algorithms are materially regulations, the most natural thing would be to simply apply to them the legal guarantees that our Law has already established, and has decided over the years, for the latter. A measure that, furthermore, would fit perfectly, as a guarantee and a careful one, with the constitutional guidelines of precaution that we have referred to be necessary to guide our legal response to the phenomenon. However, this conclusion is far from coinciding with what is shaping the reaction of the legal systems around us. A reaction that, in the best of cases, has centred the discussion and possible solutions on the question, solely, of the publicity of the code – and even so with many nuances, cautions and insufficiencies– without extracting either on this point, nor on all the others –directly obliterated– the legal conclusions due to the regulatory nature of these algorithms and source code.

2.1.1. *The inadequacy of current legal response*

As it has already been pointed out, and to date, the reaction of our legal systems to the phenomenon described, both in its national and European dimensions, has been very disappointing due to their lack of ambition as well as their proven inability to face up to the new reality with respect to the implications described and very especially with respect to the establishment of sufficient guarantees to protect citizens from the use of algorithms and AI by public administrations. As far as we are concerned, we can detect two complementary guidelines, with a common point of arrival, although starting from different origins. On the one hand, the response of some systems, like the Spanish legal system, that have gradually eliminated certain precautions and provisions that contained generic guarantees as the realities

on which they operated became more present, that is, just when they were most needed. The ultimate reason for this evolution has been a short-sighted approach to the problem which, while realising that applying these guarantees was difficult and could compromise the technological evolution, has opted for their dissolution so as not to hinder the possible use of these tools. On the other hand, we can consider the legal reaction of namely European law, which has so far been based on only one tool: data protection rules. Something which appears not only to be frankly insufficient in practice but also profoundly inadequate from a theoretical perspective to confront the problems described, which only tangentially have to do with data protection. It simply gives the impression that, in the absence of the capacity or will to provide a coherent and systematic response, it has been decided to resort to the tools available to outline a guarantee regime of minimums. It is not surprising, then, that the results are frankly unsatisfactory.

2.1.2. *The example of the surprising involution of Spanish legislation on guarantees against the use of algorithms and programs by public administrations*

As an example of the first approach, it is interesting to quickly explain how in recent times Spanish law has been not only neglecting new guarantees associated with the use of algorithms by public authorities but restricting old provisions which in principle seemed to have been designed precisely to establish certain precautions and protections against the use of technological or computerised means by the public authorities. The Spanish Constitution (CE), for example, seems to contain provisions that in some way can be connected to an expression, *avant la lettre*, of that afore proposed transfer of the precautionary principle regarding the use of technological means: the constitutional obligation established in Article 18.4 CC that the Law should limit “the use of information technology to guarantee (...) the full exercise of (citizens’) rights”. This constitutional guideline requires the legislator to limit the development of these technologies whenever necessary to ensure that citizens’ rights are protected in any case against from whatever administrative action. On the other hand, it should not escape anyone’s attention that with this formulation, implicitly, the Spanish constitutional text conceives technological developments as potentially dangerous for citizens’ rights and thus emphasises the need to always accompany them with appropriate legal guarantees.

In a way that must be considered quite coherent with this constitutional provision, and with regard to administrative procedure and the

⁶⁰ Some administrative and judicial decisions have already accepted this idea in some European countries such as Italy, as a recent paper by Angelo Giuseppe Orofino and Giovanni Gallone has pointed out. See the list of decisions in A. G. Orofino and G. Gallone, *L’intelligenza artificiale al servizio delle funzioni amministrative: profili problematici e spunti di riflessione*, in *Giurisprudenza italiana*, 2020, 1738-1748.

action of public authorities that could affect the sphere of the legal status of rights and duties of citizens, the old and now repealed art. 45 of Law 30/1992, of the Legal Regime of Public Administrations and Common Administrative Procedure (LRJAP-PAC), offered an approach with very interesting possibilities by pointing out that, although the use and application of any electronic, computerised and telematic techniques and means available at the time and in the future should be encouraged, this application should always be adapted to the “limitations that the Constitution and the laws establish on the use of these means” (Art. 45.1 LRJAP-PAC, which in turn refers to the above-mentioned constitutional provision). Furthermore, in what was a very important provision on the question of the application and use of algorithms, it was explained that “the electronic, computer and telematic programmes and applications to be used by the public administrations for the exercise of their powers must be previously approved by the competent body, which must publicly disseminate their characteristics” (art. 45.4 LRJAP-PAC).

At a time like 1992 when algorithmic tools were still in a state of incipient development, the Spanish legislator proposed a regulation of the incorporation of future technological advances in the actions of public authorities that was very sensible, prudent and fully consistent with the aforementioned constitutional mandate. Although the public administrations, in the exercise of their functions, could incorporate all kind of new and improved technologies, they had to do so in such a way as to transfer certain substantive and material elements of the guarantees already in force. In particular, the explicit approval of the use of the instrument by the administrative body and, very importantly, public available information of the characteristics of the tool –and not only an explanation of its essential elements– were required. In this way, it was possible to make those who decided to use any AI tool responsible, and also through a formalised procedure that could in turn be challenged, as well as to guarantee the publicity of its characteristics. This legal framework, although necessarily generic, limited and not very detailed –also because we were at a moment of incipient development in the use of these instruments–, allowed for a complete publication of source code if the tool in question was a computer decision algorithm.

Although it is true that this text could be criticised for lacking the necessary “dynamic

perspective”⁶¹, it is also true that the “pretensions of amplitude in the regulation” of a precept such as the Spanish art. 45 LRJAP allowed for the acceptance of certain solutions with a degree of flexibility that subsequent legislative practice, limited to the specific regulation of these phenomena, has weakened. The greatest merit of this regulation is that it was right to establish some precautions and to recall the need to preserve the material content of traditional guarantees whatever the technological development and not withstanding which algorithmic tool used. Its main idea is to transfer to the administrative action carried out using electronic tools exactly the same balance between efficiency, guarantees and citizens’ rights as the action carried out using traditional means, which is just right. An idea, however, that has disappeared from the current Spanish administrative legislation (LPAC 39/2015, on Common Administrative Procedure).

A first step in minimising guarantees was, paradoxically, carried out by the legislative act 11/2007, on Citizens’ Electronic Access to Public Services (LAE), the first serious attempt to address the constitutional mandate to channel and limit the use of IT so that it does not diminish citizens’ effective capacity to assert their rights. A very commendable effort in many respects, but a piece of legislation that clearly failed on this point. Its art. 39 LAE was the first restriction in terms of the code’s cognisance and transparency in the Spanish legal system. It establishes the specific and exact obligations that the Administration has to comply with in order to make use of programs and algorithms for the adoption of automated administrative decisions, but it did so by opting not for that guaranteed interpretation possible with the previous legislation but with a much more modest approach that limited itself to requiring the prior establishment of the “competent body and bodies (...) for the definition of the specifications, programming, maintenance, supervision and quality control” together with the need, “where appropriate” –which implies that this need not always or necessarily existed– to designate those responsible for “auditing the information system and its source code”. Also, as it cannot be less, the precept established that it must be indicated which body is considered responsible (Art. 39 LAE *in fine*). In any case, the step backwards was undeniable, both in strictly formal matters, with the disappearance of the need for prior administrative approval of the use of the tool –something that allowed for certain controls and even moderate possibilities of impugnation of a

⁶¹ J. Valero Torrijos, *Innovación tecnológica e innovación administrativa*, presentation at *Seminario de Teoría y Método del Derecho Público*, 2016.

prior and abstract type, even if they were complicated⁶²–, but also regarding the actual effects of the system, as the new text made it clear that in no case did the full publication of the code appear to be legally required.

Such a regulation was commonplace in European legal systems those days, but it was a clear involution from the Spanish Constitution. It sought to guarantee a certain possibility of traceability of the criteria followed for its adoption, as well as the possibility of auditing the programming of the technological means used⁶³, though. However, the algorithms in question are not considered regulations, nor is their source code considered to be equivalent to that of a normative predetermination of how public administrations should act. Therefore, full publicity is not considered necessary as a default rule –indeed, this solution is expressly excluded as the general rule by default–. In addition, as it cannot be less from these premises, the rest of the additional guarantees that our system associates with the normative regulations are also missing. The only legal precaution required for the use of algorithms is the identification of the persons responsible for defining the aforementioned specifications and some possibilities of auditing. These are, as can be understood, frankly insufficient guarantees, much lower than those associated with any traditional regulation, inconsistent with the effective function of these algorithms associated with decision-making and, in short, a legal framework that would have been deemed as clearly insufficient in the light of a demanding and guaranteeing understanding. Obviously, this reduction of legal guarantees is associated with the attempt to make the use of these mechanisms more habitual and easier, at a time when perhaps their possible risks were less perceived than the advantages they can bring. Nevertheless, even at this point it seemed clear to Spanish scholars that there was a need for much greater development and regulatory clarification⁶⁴.

The same cannot be said of the current legislation, which was adopted at a time when these risks are already fully known. The new pieces of legislation came out in 2015 to replace both the aforementioned 39/1992 (LRJAP–PAC) and 11/2007 (LAE) legislative acts. However, those new 39/2015, on the Common

Administrative Procedure of Public Administrations (LPAC), and 40/2014, on the Legal Regime of the Public Sector (LRJSP), legislative acts abound in this trend towards the reduction of guarantees associated with the use of technological means by the Administration with the intention of making the use of these instruments less legally costly. Beyond the correction or incorrectness with which both regulations have adapted traditional administrative procedures to the technological paradigm, it is very interesting to trace how the evolution with respect to the 2007 legislation is clearly regressive. It is so when it comes to minimising the Administration’s obligations – to guarantee open source channels and use, or to provide a guarantee of service to citizens – if we compare these requirements with those of the 2007 LAE. Regarding the use of algorithms, it enshrines point by point the model of art. 39 LAE in the new art. 41.2 LRJSP. Nor administrative practice, neither the growing academic and social concern for the increasing use of algorithms for decision-making and its implications led the legislator to change not a comma or to introduce a single additional guarantee. The following rule is thus established as a consolidated normative parameter in Spanish administrative law: *“In the case of automated administrative action, the competent body or bodies, as the case may be, must be previously established for the definition of the specifications, programming, maintenance, supervision and quality control and, where appropriate, auditing of the information system and its source code. The body or bodies to be held responsible for the purpose of contesting the specifications must also be indicated”*.

The decline on this point, which has been definitively consolidated after 2015, is clear. The reasons for this evolution seem clear if we point out the fact that this new regulation undoubtedly make it much easier to use electronic means or AI for administrative decision-making. While doing so, it is not necessary, according to current Spanish Administrative law, to publish the exact details of how and in what sense the algorithm operates, the right to access the source code is not recognised, nor is the necessary complete publication of this code given in any case, not even to the actual citizens affected by the decision. This legal framework only provides for the generic possibility of auditing both the information system and the source code, as well as the need to identify a person responsible for supervising it, in addition to the person responsible “for the purpose of contesting” the automated administrative action in question. It is not strange that, with this legal framework, the Spanish public administration refuses even to provide access to the source code in apparently

⁶² J. Valero Torrijos, *Las garantías jurídicas de la inteligencia artificial en la actividad administrativa desde la perspectiva de la Buena administración*, 86-87.

⁶³ I. Martín Delgado, *Naturaleza, concepto y régimen jurídico de la actuación administrativa automatizada*, 353-386.

⁶⁴ I. Martín Delgado, *Naturaleza, concepto y régimen jurídico de la actuación administrativa automatizada*, 353-386; J. Valero Torrijos *Derecho, innovación y administración electrónica*, Sevilla, Global Law Press, 2013, 46-50.

simple cases where the algorithm should be relatively uncontroversial. For instance, the Spanish government has refused, after the request from a private foundation dedicated to trying to promote public transparency, *Civio*, to disclose the source code of an algorithm used to calculate social aids to pay the electricity bills to most vulnerable groups adducing that the protection of the intellectual property of the owners and developers of the algorithm in question prevented it. This decision was also endorsed by the Spanish State Council for Transparency in its resolution 701/2018, of 18 February 2018, which is currently being challenged before the courts⁶⁵. Even though we can also find some examples of cases where, after the initial refusal to provide the source code, the bodies responsible for transparency have considered that it had to be communicated – especially in the case of the Catalan Commission for the Guarantee of the Right to Access to Public Information (GAIP), in its decisions 123/2016 and 124/2016, of 21 September 2016–, for the moment those holdings are not the norm. Similarly, the trend in Europe seems to be also quite restrictive. Although we can find some European examples where it has also been accepted to provide the source code⁶⁶, for the time being such a right is far from being granted as a general and unequivocal rule.

However, beyond the fact that the right to know the source code of the software used to make decisions –or to decisively help in making decisions– may or may not be consolidated, in the end of this process, by means of the rules on transparency, we must not lose sight of the insufficiency of an approach based solely on the demands of access to public information when we talk about programmes and algorithms that have a regulatory effect⁶⁷. This insufficiency is even more evident if we analyse the European legal framework on the matter, which has also evolved in a very unsatisfactory manner.

2.2 The insufficiency of the current European legal response

As it has been indicated, the –unsatisfactory– point of arrival of legislation in countries such as Spain is otherwise fully coherent –as regards the ultimate paradigm on which it is based– with the

⁶⁵ J. De la Cueva, *¿Quién vigila al algoritmo?*, in *El Notario del Siglo XXI*, 87, 2019.

⁶⁶ L. Cotino Hueso, *Riesgos e impactos del Big Data, la inteligencia artificial y la robótica: enfoques, modelos y principios de la respuesta del derecho*, 36; J. Ponce Solé, *Inteligencia artificial, Derecho administrativo y reserva de humanidad: algoritmos y procedimiento administrativo debido tecnológico*, in *Revista General de Derecho Administrativo*, 50, 2019, 42.

⁶⁷ A. Cerrillo i Martínez, *Com obrir les caixes negres de les Administracions públiques? Transparència i rendició de comptes en l'ús d'algoritmes*, 18-22.

only legal framework referring to these issues that European law has produced to date, which comes from the rules on data protection and, specifically, from the profusely mentioned and commented Article 22 of the General Data Protection Regulation 2016/679 (GDPR), of 27 April 2016⁶⁸. This precept, in the absence of more demanding and specific rules –both at a national and European level– regarding how and with what guarantees public administrations can use algorithms to adopt decisions, or help to consider them, has become the legal rule most commonly cited as a control parameter for the automated activity of the Administration. And this is despite the fact that, as is obvious, it is a rule that is not specifically designed to fulfil this function –and even less so in relation to public authorities–, as to constitute a mere element of the precautions and protections that any person responsible for data processing, whether in the public sector or more frequently in a private company, is obliged to adopt. This precept establishes that any citizen –“data subject”–, in fact, according to the lexicon used by the GDPR which, as has been said, uses legal concepts consistent with the application of the same, essentially to the legal–private sphere– has the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects on him or significantly affects him in a similar way (Article 22.1 GDPR). As it can be seen, the regulation does not innovate excessively with respect to the traditional prohibition in this sense of the previous legislation on data protection⁶⁹. Furthermore, it contains, like its former version, a very relevant means of exclusion in that it will be applicable only to decisions “only based on automated processing, which allows any decision that is not formally adopted exclusively by means of these algorithms or programs to be excluded from the prohibition. This exclusion may not be of much importance in the private legal world. For the adoption of legal–administrative decisions, though, would make easy to relativise the impact of a regulation such

⁶⁸ A. Palma Ortigosa, *Decisiones automatizadas en el RGPD. El uso de algoritmos en el contexto de la protección de datos*, in *Revista General de Derecho Administrativo*, 50, 2019; M. Sancho López, *Estrategias legales para garantizar los derechos fundamentales frente a los desafíos del Big Data*, in *Revista General de Derecho Administrativo*, 50, 2019, 5-10; L. A. Bygrave, *Minding the Machine v2.0. The EU General Protection Regulation and Automated Decision-Making*, in *Algorithmic Regulation*, K. Yeung and M. Lodge (eds.), Oxford, Oxford University Press, 2019, 243-262.

J. Ponce Solé, *Inteligencia artificial, Derecho administrativo y reserva de humanidad: algoritmos y procedimiento administrativo debido tecnológico*, 13-15

⁶⁹ L. Cotino Hueso, *Riesgos e impactos del Big Data, la inteligencia artificial y la robótica: enfoques, modelos y principios de la respuesta del derecho*, 26-28.

as that described, because is not complicated to establish that almost any administrative outcome is at least a combination of human activity and algorithmic decision, even on a purely formal level.

In addition, provision itself recognises that those limits will not be applied when the automated processing is expressly consented to by the data subject (Article 22.2 c GDPR); it is necessary for the conclusion of a contract between the data subject and the data controller (Article 22.2. a GDPR); or, which is key in relation to administrative decisions, when it is authorised by Union or Member State law which applies to the data controller and which also establishes appropriate measures to safeguard the rights and freedoms and legitimate interests of the data subject (Art. 22.2 b GDPR). Therefore, any national legislative determination that authorises public authorities to carry out these processing operations will easily circumvent any possible restriction derived from GDPR or other national regulations in the field of data protection. Thus, for example, it is quite obvious that the generic authorisation contained in the Spanish legal framework (Article 41.2 LRJSP) is in itself sufficient to make it unnecessary to require the consent of individuals/stakeholders/citizens when Spanish public administrations carry out such processing.

Likewise, it should be noted that Article 22.3 GDPR establishes guarantees for the cases of exception provided for in Articles 22.2 a) and c) –not so in Article 22.2 b), which is nevertheless revealing– which oblige, in these cases, to act with a series of guarantees. Thus, in cases where only automated processing takes place, measures must be adopted to safeguard the rights and freedoms and the legitimate interests of the data subject, at least the right to obtain human intervention by the controller, to express his point of view and to challenge the decision. Data subjects must also have total access to “significant” information in case they are subject to decisions of this type as well as to the “applied logic” and its significance and importance for data processing, ex Articles 13.2 f), 14 2 g) and 15 1h) GDPR combined with Article 22 GDPR⁷⁰. Although the European Data Protection Committee –formerly the Art. 29 Working Party– has clearly established, despite the different doctrinal approaches, that we are not dealing with an *opt-out* right but rather with a true prohibition of data processing linked to the adoption of algorithmic decisions regarding

⁷⁰ A. Palma Ortigosa, *Decisiones automatizadas en el RGPD. El uso de algoritmos en el contexto de la protección de datos*, 25-29; J. Ponce Solé, *Inteligencia artificial, Derecho administrativo y reserva de humanidad: algoritmos y procedimiento administrativo debido tecnológico*, 13-15

citizens⁷¹, the guarantee does not add much more to that contained in typical national laws on data protection. And this is so even though it is sometimes argued that the nature of the data protection measures contained in the RGDP obliges us to adapt the demands and level and intensity of the controls to the actual effect on citizens, for example according to the effective interference that is envisaged depending on who is responsible for processing the data and their position *vis à vis* the citizens (art. 28 RGDP), which would allow these requirements to be extended by way of interpretation when we are dealing with public processing⁷². It is doubtful that this interpretation is coherent with a provision that precisely establishes fewer controls for the exception of Article 22.2 b) GDPR than for those of sections 22.2 a) and c). Nor does the necessary impact analysis imposed by European regulations on all current processing of data, and although logically it will be different with regard to public administrations due to their position in relation to private individuals, constitute, despite its need and importance, a sufficiently satisfactory solution, due to its limited nature⁷³. More than anything else, a combined interpretation of the two regulations, the state and the European, is perfectly possible without implying, with respect to public treatments, significant improvements.

In short, the inadequacies of this instrument in terms of guaranteeing even sufficient transparency on the algorithms and programming applied to citizens are undeniable. Firstly, it is quite clear that in no case are we faced with an obligation to reveal the complete and exact content of the entire source code, but rather a very limited obligation to illustrate the basic criteria from which it operates. Secondly, as we have seen, even this limited obligation can be exempted on public law grounds in the light of strict European law, which highlights the capacity of public authorities, if they deem it necessary, to exempt themselves from even these scant obligations by means of *ad hoc* legislation. In conclusion, the main contribution of the European regulation is to confirm that, the generous thresholds established by national

⁷¹ A. Palma Ortigosa, *Decisiones automatizadas en el RGPD. El uso de algoritmos en el contexto de la protección de datos*, 21-23; L. A. Bygrave, *Minding the Machine v2.0. The EU General Protection Regulation and Automated Decision-Making*, 253.

⁷² L. A. Bygrave, *Minding the Machine v2.0. The EU General Protection Regulation and Automated Decision-Making*, 255-258.

⁷³ J. Valero Torrijos, *Las garantías jurídicas de la inteligencia artificial en la actividad administrativa desde la perspectiva de la Buena administración*, 88-89; G. Lazcoz Moratinos, *Análisis jurídico de la toma de decisiones algorítmica en la asistencia sanitaria*, in *La regulación de los algoritmos*, A. Huergo Lora (Dir.), Madrid, Thomson-Reuters Aranzadi, 2020, 287-293.

legislations in terms of guarantees in the face of automated processing by the public sector are considered to be sufficient, fully accepting that publication can be replaced by audit mechanisms on the functioning of the algorithms.

Nor can the RGDP be judged too harshly on this basis. In the end, it is a regulation which was not designed to establish the guarantees to be recognised for citizens against the exercise of authority by the public powers that may affect their legal status, rights and freedoms, but rather to regulate private legal traffic and protect consumers against companies that carry out increasingly massive data processing. This does not mean that the RGDP is not an important piece of legislation and has not represented an unquestionable improvement with respect to the previous situation in these areas, improving and clarifying some of the rights and guarantees of citizens with respect to these situations and, for example, substantially and necessarily extending the catalogue of rights recognised with respect to those who process our data. Nevertheless, however important and relevant this function may be, it cannot be ignored that we are basically dealing with an instrument essentially aimed at protecting private citizens against other private agents who operate in commercial environments where, for example, and at least from a theoretical perspective, there is always the opportunity not to contract the service in question. Furthermore, the RGDP is not unaffected by the potential ambition of its restrictions because it competes with the regulations of other territorial spaces and markets when it comes to disciplining and regulating relations between companies and citizens, and this imposes certain limitations on it arising from the need to allow competitive conditions for European companies.

The requirements to be applied to public authorities on this point would necessarily be much greater than those applicable to inter-private relations, without it being necessary to argue too much why: it is sufficient to recall the imperative nature, the coactivity, inherent to any exercise of public functions, especially if we are talking about the exercise of authority functions. Insofar as citizens have no option of avoiding their effects, the rules that regulate these specific uses of algorithms to adopt administrative decisions must necessarily be different and more guaranteeing than those strictly derived from the rules on data protection, which furthermore refer to only one of the issues involved in the use of artificial intelligence.

The fact that in the private world, in the absence of more demanding instruments, RGDP is the only available tool should not lead us to justify this same unsatisfactory situation with regard to the public sphere. Even more so if we

bear in mind that this situation is even questionable with respect to the public regulation of some of those private relations, inasmuch as there are possible conditions of equality derived from the use of algorithms that should have additional legal protections to those strictly derived from data protection. Indeed, the problem of equity or equality sometimes presents dimensions that go beyond the mere logic of data protection, which seeks to guarantee “neutral” processing and from which little can be done about problems that have to do with the very architecture of some algorithms⁷⁴ or possible algorithmic biases that may result in serious discrimination⁷⁵. Those biases are particularly difficult to deal with if they seem to be a natural consequence, for example, of the game of supply and demand processed by certain digital platforms⁷⁶. Faced with these situations, a much more demanding public regulation that would at least try to ensure the protection of equality against these private treatments seems to be necessary⁷⁷. This is precisely what the pioneering judgment of the District Court of The Hague in the Netherlands of 5 February 2020 (ECLI:NL:RBDHA: 2020) has done. This ruling prevented the use by the Dutch authorities of an algorithmic risk weighting system, which was intended to be used mainly for the detection and prosecution of fraud, because it was understood that it affected the right to privacy of individuals recognised by article 8.2 of the European Convention on Human Rights by collecting and connecting excessive personal information without sufficient controls and with enormous risks of producing undesirable bias⁷⁸. On balance, a more demanding approach to the phenomenon will oblige our legal systems to understand the use of these tools as non-proportional without a clear understanding of

⁷⁴ R. Fisman and M. Luca, *Fixing Discrimination in Online Marketplaces*, in *Harvard Business Review*, 12-2016, 2016, 88-95; K. Yeung, *Why Worry about Decision-Making by Machines?*, 23-31; R. Martínez Martínez, *Inteligencia artificial desde el diseño. Retos y estrategias para el cumplimiento normativo*, in *Revista Catalana de Dret Públic*, 58, 2019, 68-72.

⁷⁵ S. Barocas and A. D. Selbst, *Big Data's Disparate Impact*, in *California Law Review*, 104, 2016, 671-732; J. A. Kroll, J. Huey, S. Barocas, E. W. Felten, J. R. Reidenberg, D. G. Robinson and H. Yu, *Accountable algorithms*, in *University of Pennsylvania Law Review*, 165(3), 2017, 633-705.

⁷⁶ B. Edelman, B. Luca and D. Svirsky, *Racial Discrimination in the Sharing Economy: Evidence from a Filed Experiment*, in *American Economic Journal: Applied Economics*, 9(2), 2017, 1-22.

⁷⁷ C. Coglianese and D. Lehr, *Transparency and Algorithmic Governance*, in *Administrative Law Review*, 70(4), 2018.

⁷⁸ L. Cotino Hueso, *SyRI, ¿A quién sanciono? Garantías frente al uso de la inteligencia artificial y decisiones automatizadas en el sector público y la sentencia holandesa de febrero de 2020*, in *La Ley Privacidad*, 4, 2020.

both their scope and all the information on the privacy conditions and other biases that may derive from their use⁷⁹.

In any case, this regulation must take also into account, moreover, that algorithms also provide new possibilities to fight inequality precisely because of the greater ease in tracing the real reasons for their decisions, identifying their biases or controlling and avoiding them through appropriate programming⁸⁰. In order to properly take these elements into account, it will be also necessary to determine when and in which cases public authorities can establish obligations in this sense that must be complied with by the private agents that use that kind of algorithms and AI solutions –as well as, if necessary, with much greater demands, by establishing stable rules on the use of these instruments by the public authorities–.

This state of affairs is not satisfactory because, as we have already explained, the computer codification of responses by the public authorities to various situations, in any of its forms, is an activity strictly equivalent to their legal codification. Whether these are extracted by means of algorithms and applying more or less complex programming logic and artificial intelligence that is declined and expressed by means of the source code or whether they are by means of rules and norms written through formulas and legal concepts that are expressed linguistically and applied deductively from the classic operation of subsumption made by the applicators, it is materially the same. For this reason, it should require the same basic rules and guarantees and, consequently, a proper adaptation– a materially complete translation –, of the traditional guarantees, as we will see below.

3. How to translate to algorithmic decisions the legal framework which delimits and limits the use of regulatory powers and its guarantees

In view of the shortcomings of the current European legislative response, which is unaware of the materially normative reality displayed by the algorithms and programs used by Public Administrations, it is necessary to export the guarantees from the traditional legal framework of regulations to this field. We have to undergo a “necessary reconfiguration of legal concepts in the light of technological singularities”⁸¹ that

must go far beyond recognising the necessity of publicity of the source code of the algorithms used to determine or adopt decisions –which is not even guaranteed today–. A new and ambitious legal framework must go much further and, guaranteeing also and primarily this issue⁸², also hasten each and every one of the consequences of recognising the normative character to these instruments. Starting from the fact that algorithms also pre-configure and oblige the public administration itself once they are approved, as a minimum guarantee of singular non-derogability in order to avoid an arbitrary use –or non use– of them⁸³, as we do with any other normative programming of the actions of public authorities⁸⁴. This is a legal operation which, once assumed, is not particularly complex, but has the advantage of being immediately deployed in many areas.

Indeed, it does not seem intellectually difficult to translate the traditional guarantees that we have been polishing over decades for the best and most guaranteed application of regulatory standards. Each and every one of them, as it can be argued without excessive difficulty, play an equivalent role and provide evident protections also in this new environment, being perfectly suitable in the face of the new technological paradigm: those that refer to the drafting phase; as well as those that have to do with control measures and legal certainty –legal and computer security, in the new paradigm–; and also those referring, finally, to the strictest and most direct means and possibilities of defence and legal remedies against a possible use of the algorithms that affect a specific individual with respect to a specific action or situation.

3.1. Guarantees of regulatory standards and their meaning in relation to Code 2.0: participation, publicity, regulatory planning and ex ante and ex post evaluation

Beyond provisions of a necessary administrative approval of the technological tools used by the Administration, this type of *ex ante* control must be significantly increased. To this end, in line with its regulatory nature, there is nothing better than following the guidelines set out today for the drafting of regulations, which are perfectly in line with the needs for greater control required by the algorithms used by the

⁷⁹ A. Soriano Aranz, *The control of algorithmic discrimination*, PhD dissertation, University of València, 2020.

⁸⁰ J. Kleinberg, J. Ludwig, S. Mullainathan and C. R. Sunstein, *Discrimination in the Age of Algorithms*, in *Journal of Legal Analysis*, 10(2018), 2018, 154-163.

⁸¹ J. Valero Torrijos *Derecho, innovación y administración electrónica*, 193-194.

⁸² J. De la Cueva, *¿Quién vigila al algoritmo?*; J. Ponce Solé, *Inteligencia artificial, Derecho administrativo y reserva de humanidad: algoritmos y procedimiento administrativo debido tecnológico*, 34.

⁸³ E. Melero Alonso, *Reglamentos y disposiciones administrativas: análisis teórico y práctico*, Madrid, Lex Nova, 2005, 339-340.

⁸⁴ Cfr. P. Daly, *Artificial Administration: Administrative Law in the Age of Machines*, 16-19.

Administration for decision-making.

The drafting of regulations in almost any country must follow a very specific procedure, which is provided for by law, and which has been enhanced in the last decades in order to produce “better regulation”⁸⁵. Little by little, however, the convenience of introducing more demanding mechanisms of both participation and normative evaluation *ex ante* and *ex post* has been fully assumed⁸⁶, as well as the necessity of establishing better normative planning which has to come along the increase of effective citizen participation in these procedures, in a way that goes beyond the traditional interest groups on which the previous model of participation rested in excess and almost exclusively⁸⁷. For all this, as it is known, it is also very usual, almost ritualistic, to positively consider the great usefulness of the use of electronic media for the purpose of transmitting a better, wider, more porous and also “better” participation⁸⁸. This, although it has a cliché element, is nevertheless true and, at the same time, illustrates the possibilities that current technological means provide to increase and improve citizens’ participation in regulatory procedures. It is striking that, in fairness, it is not considered necessary to apply these same possibilities to the processes of identifying which may be the best and most appropriate algorithmic codes and programming when these have to conform to the ulterior Administration’s decision.

It is nowadays commonplace to say that all these measures seek to improve regulatory quality essentially from two different perspectives which, although they may sometimes coexist in a certain tension, in this case they are coordinated in a fairly harmonious way: the attempt to improve the quality of the

final product through better technocratic programming, on the one hand, which would lead to better results thanks to the existence of better evaluation processes than include the seeking of expert knowledge; and, on the other hand, the search for better regulatory results based on democratic control from the outset, allowing citizens to early scrutinise draft regulations and participate in them, which in turn provides great added value with respect to better identification of the objectives and aims that any regulation should pursue⁸⁹. These two dimensions, as has been said, can sometimes appear as conflicting, but in terms of regulatory quality they are perfectly aligned. Modern requirements, in line with what has already been established and tested in other countries, try to make the most of them. With regard to both goals, the application of these exact conditions to the approval of algorithms that can be used by the Administration is mimetically transferred without any problem.

Indeed, from a more technical point of view, the forecasts on regulatory planning, the growing demands on an *ex ante* evaluation that identifies precisely what is to be achieved and the most appropriate measures to be taken by means of an thoroughly expert study, as well as the obligation to review *a posteriori* whether or not the objectives have actually been met and whether the measures adopted have been verified as effectively suitable, are nothing but instruments of improvement that make it necessary to organise the expert work of the administrative bureaucracies involved in the creation, application and improvement of the regulations in a more ordered and more effective way. For their part, the measures to encourage citizen participation in the process, especially from the moment when it is actively sought to go beyond interest groups, seek greater democratic porosity in all phases of the process, from the initial identification of the regulatory objectives to the possibility of participation by making allegations or criticisms of the draft regulation, in order to polish up errors and improve the overall orientation of the projects.

Thus, with regard to the purely technical analysis, more appropriate to the functions performed by administrative and bureaucratic structures, it is not complicated to argue that in such a novel environment, with so much uncertainty, and where we have also agreed that a sort of precautionary principle must be applied to algorithmic standardization, both very careful planning and precise and demanding *ex ante* and

⁸⁵ C. Gimeno Fernández, *La qualitat normativa al País Valencià*, Barcelona, Riurau Editors, 2018.

⁸⁶ I. Araguàs Galcerà, *La transparencia en el ejercicio de la potestad reglamentaria*, 2016, Barcelona, Atelier, 54-60 and 75-77.

⁸⁷ E. Meleró Alonso, *La ‘democracia orgánica’ y el trámite de audiencia en la elaboración de los reglamentos*, in *Revista de Estudios Políticos*, 126, 2004, 240-243; M. Rebollo Puig, *La participación de las entidades representativas de intereses en el procedimiento de elaboración de disposiciones administrativas generales*, in *Revista de Administración Pública*, 115, 1988, 99-105.

⁸⁸ L. Arroyo Jiménez, *Participación electrónica y elaboración de normas administrativas en España y en los Estados Unidos de América*, in *La reforma de la Administración electrónica: una oportunidad para la innovación desde el Derecho*, I. Martín Delgado (dir.), INAP, 2017, 231-258; A. Boix Palop, *Participación electrónica como mecanismo para la mejora de la calidad normativa en la elaboración de reglamentos y otras disposiciones tras la reforma administrativa de 2015*, in *La reforma de la Administración electrónica: una oportunidad para la innovación desde el Derecho*, I. Martín Delgado (dir.), INAP, 2017, 259-282; C. Gimeno Fernández, *La qualitat normativa al País Valencià*.

⁸⁹ S. Muñoz Machado, *Tratado de Derecho Administrativo y Derecho Público General*, 968-970; I. Araguàs Galcerà, *La transparencia en el ejercicio de la potestad reglamentaria*, 250-252.

ex post evaluation are even more necessary⁹⁰. Each and every one of the arguments that have been repeated *ad nauseam* about the advantages of such planning, transparency and scheduling can therefore be reiterated with even more force in relation to algorithms. The effective possibilities of transparency and algorithmic auditing, in fact, are closely linked to the very principle of democracy when and if the action of public authorities is made throughout algorithms⁹¹. The control of the parameters from which they act is nothing but the key that determines a satisfactory transparency, which is characteristic of any advanced democracy⁹². It should also be remembered that this is also the reason why free software and *open access* source codes have a special predilection in the IT sector in all the initial stages of development of new technological tools as participative methods that encourage collaboration and sharing, so as to minimise errors and avoid, in poorly tested environments, major mistakes or failures⁹³.

This idea also leads to other relevant conclusions. For example, if this careful planning and control over *normative production 2.0* is indeed as or more important in this field, this should also lead to preaching the convenience of much more direct public control over its production⁹⁴. This does not mean that external help or advice cannot be used, but it does indeed mean that both the control and final decision on the completed regulatory product must in any case be public, just as the whole process must be publicly evaluated and not merely privately audited.

Similarly, it seems clear that in these novel environments, and where the experiences we are developing in not a few cases are the first or even pilot tests, *ex post* evaluation of the various experiences will be absolutely essential, even more so than in other environments. To this end, all the information on the obtained results and produced effects must be made public and publishable.

In short, the traditional rules already fully

established in our law regarding the regulatory quality requirements to establish new regulations seem not only very appropriate to be fully applicable also with regard to the algorithms to be used by the public authorities to take decisions, but it can even be argued that with regard to the latter these precautions are even more important.

Identical reflections, and also very easy to translate to algorithm design, deserve the essential importance of citizen participation in these processes. There are no relevant differences between its importance while operating for the improvement and control of a normative codification of the traditional action of the Administration by means of a regulation or when referring to democratic participation with respect to how the algorithms used for this same function should act. Apart from the essential character as a key element for the control and improvement of any process of normative participation, or the considerations related to the democratic principle, there is an additional question that specifically arises in these cases: the differential importance of correctly establishing the aims and objectives of algorithms' source code.

If we recall, in fact, the principles of the Asilomar Conference already mentioned, the more complex the programming and the more indeterminate the solution, or the greater the scope of uncertainty –and very especially in all the processes where there are elements of *machine learning* involved in the programming and operation of the algorithm or *black box* phenomena are going to occur–, the most important the identification of the specific values and the ultimate objectives of the algorithm are. It is difficult to deny how essential this intervention is from a democratic perspective. In fact, if the function of the participation mechanisms in these processes is both to counterbalance and improve the strict bureaucratic technical evaluation with a democratic *relegitimation* in all cases, in a context such as algorithmic programming this function is far more important.

As it can be seen, it is therefore not difficult to argue that each and every one of the reasons why we have been providing ourselves with an increasingly demanding process for drawing up regulatory standards also concur, even more intensely, with respect to algorithms –due to the aforementioned situation of initial uncertainty in which we find ourselves and the lack of clearly established technical solutions, on the one hand; and the crucial importance of correctly identifying the objectives with which to programme the most advanced artificial intelligence–. This is in contrast to current regulations –for instance Art. 22 GDPR– which

⁹⁰ D. Canals Ametler, *El proceso normativo ante el avance tecnológico y la transformación digital (inteligencia artificial, redes sociales y datos masivos)*, in *Revista General de Derecho Administrativo*, 50, 2019.

⁹¹ R. Binns, *Algorithmic Accountability and Public Reason*, in *Philosophy and Technology*, 31(4), 2017, 543-556.

⁹² M. Bovens, T. Schillemans and P. Hart, *Does public accountability work? An assessment*, in *Public Administration*, 86(1), 2008 230-234; J. Castellanos Claramunt, *La democracia algorítmica: inteligencia artificial, democracia y participación política*, in *Revista General de Derecho Administrativo*, 50, 2019.

⁹³ L. Lessig, *Code version 2.0*, 151-153; G. Lazcoz Moratino, *Análisis jurídico de la toma de decisiones algorítmica en la asistencia sanitaria*, in *La regulación de los algoritmos*, A. Huergo Lora (Dir.), Madrid, Thomson-Reuters Aranzadi, 2020, 293-295

⁹⁴ L. Lessig, *Code version 2.0*, 327-329.

do not pay much attention to this dimension, nor, of course, do they establish positive obligations in this sense.

Not understanding that algorithms and programmes are, to all intents and purposes, legal norms when they act as such has very negative effects in this field and allows the application of minimum quality checks and measures, not sufficiently reflected upon or evaluated, and not at all audited on the basis of the established procedures of normative evaluation. Recourse to the purchase of private algorithms or, directly, to their use without the responsible public administration even being the owner of the source code, only aggravates this problem. All of these issues could be easily solved if it were simply assumed that in these cases algorithms, because they actually operate as truly *regulations 2.0*, must be treated legally like traditional normative regulations. Thus, the same requirements that apply to the procedure to approve a new regulation must be applied for new algorithms that help to reach administrative decisions or determine them.

3.2. Guarantees of control and legal-computer certainty

A second element of guarantee associated with regulatory standards is the requirement that, like any legal standard, and for reasons of obvious legal certainty, they have to be published in full⁹⁵. Only if citizens can know at all times exactly which norms and rules are applicable to them, and from which normative programming they will be required to adapt their conduct in one sense or another, is it legitimate to draw legal consequences from non-compliance or to allow coercive action by public authorities. For this reason, the requirements to ensure the legal certainty principle of the applicable rules are of paramount importance in our legal systems. They have also lately been transferred to a much greater scrutiny of every regulatory procedure standards, which are increasingly taken into account when judging the validity or invalidity of any given administrative regulation⁹⁶.

This aspect of the problem we have been analysing is the one that to date is most revealing of the radical incompatibility between the practical approach being taken by public administrations and the needs that would inevitably and clearly derive from an even minimal assumption of the normative nature of

certain algorithms. Suffice it to consider, for example, the extreme lukewarmness of the regulatory instruments such as the European RGDP to the judicial decisions in this matter, which have as a common denominator, at least to date, to consider the non-publication of the source code acceptable for a number of reasons – guarantee of business secrecy or intellectual property, for instance, even with respect to algorithms used for the assessment of the probability of recidivism taken into account for the determination of penalties or security measures–. For instance, as it is well known, this was the *ratio decidendi* in the *Loomis case*, ruled by the Wisconsin Supreme Court, accepting the final refusal to hand over the source code to researchers and defenders who wished to access it in order to analyse possible biases in the system for measuring the banning of proprietary *software* used by many US justice systems as a tool to help judges determine and concrete penalties or security measures. This decision, that was not reviewed by the US Supreme Court, affected such a sensitive element of our legal systems as the protection of the individual from the state's criminal action, that it is hard to believe the final ruling confirmed the possibility of avoiding total scrutiny of the source code⁹⁷. But this was indeed the case, setting a pattern that has been followed in other jurisdictions.

In fact, intellectual property protection is only one of the reasons usually given in the case-law of several countries⁹⁸. Beyond the detailed analysis of these cases, it is clear that the reasons given for not publishing the algorithms are frankly insufficient in the opinion of most of the doctrine⁹⁹. Basically, the essential reason why the source codes of the algorithms are not being published, and the legislative developments that support this, have more to do with considerations of possibility than with rigorous legal analysis and pose numerous problems¹⁰⁰. It is considered that, regardless of whether or not the public

⁹⁷ L. Martínez Garayand F. Montes Suay, *El uso de valoraciones del riesgo de violencia en Derecho Penal: algunas cautelas necesarias*, in *Indret*, núm. 2(2018), 2018; I. De Miguel Beriain, *Does the use of risk assessments in sentences respect the right to due process? A critical analysis of the Wisconsin v. Loomis ruling*, in *Law, Probability and Risk*, núm 17(1), 2018, 45-53.

⁹⁸ L. Cotino Hueso, *Riesgos e impactos del Big Data, la inteligencia artificial y la robótica: enfoques, modelos y principios de la respuesta del derecho*, 36.

⁹⁹ C. Coglianese and D. Lehr, *Regulating by Robot: Administrative Decision Making in the Machine Learning Era*, 1209-1213; J. Nieva Fenoll, *Inteligencia artificial y proceso judicial*, 140-143; P. Daly, *Artificial Administration: Administrative Law in the Age of Machines*, 18-19; J. De la Cueva, *Código fuente, algoritmos y fuentes del Derecho*, in *El Notario del Siglo XXI*, 77, 2018; I. De Miguel Beriain, *Does the use of risk assessments in sentences respect the right to due process? A critical analysis of the Wisconsin v. Loomis ruling*.

¹⁰⁰ L. Lessig, *Code version 2.0*, 180-190.

⁹⁵ E. Melero Alonso, *Reglamentos y disposiciones administrativas: análisis teórico y práctico*, 393-396; S. Muñoz Machado, *Tratado de Derecho Administrativo y Derecho Público General*, 857.

⁹⁶ G. Doménech Pascual, *La invalidez de los reglamentos*, València, Tirant lo Blanch, 2002, 222-223; E. Melero Alonso, *Reglamentos y disposiciones administrativas: análisis teórico y práctico*, 339-340.

authorities wish to conceal the code, it is not realistic to go to such extremes, nor necessary to sufficiently protect citizens' rights and therefore it is not appropriate to establish such an obligation, which would generate costs that would make the adoption of these technologies difficult and expensive. This is because the higher cost of self-developing this type of algorithms autonomously or of acquiring them on the market not with a mere user's licence but with a purchase of the AI tool by public administration.

Another of the reasons usually invoked to justify the unnecessary publication of the code is, in fact, that these programs and algorithms are nothing more than a support or mere help to the final decision, which in practice continues to compete with the human being –whether this is materially true or not– and that, therefore, they are still not strictly equivalent to traditional regulations. For instance, in the aforementioned *Loomis case*, the majority ruling that denies access to the source code partially uses this argument. As the particular vote in the *Loomis case* accurately points out, this doctrine is very unsatisfactory for many reasons, the least of which is not that in practice it is increasingly true in more areas, and will be in the future in many more, that decisions are materially made by algorithms based on the approved source code, notwithstanding what the theory might say¹⁰¹. Sooner or later it will therefore be necessary to modify a case-law anchored in such a weak formal assumption, increasingly disconnected from actual practice.

It is also sometimes argued that publishing the source code in its entirety does not add value and would not solve the problem because of its complexity¹⁰² and may even pose more conflicts and drawbacks than benefits¹⁰³. Thus, providing the basic guidelines on the “logic followed” by the algorithm the GDPR asks to would be more than enough, any detail or additional information being superfluous given the complexity of the source code and its technical content, which would not provide any additional value, we are told, for control purposes. This is an argument, however, also deeply unsatisfactory, because if

the source code itself is so irrelevant and unimportant, it would then be all the more reason to understand that there should be no problem in providing it in its entirety, on the one hand. Furthermore, on the other hand, the complexity of the code is no excuse, nor has it ever been, to justify its non-publication. Traditional legal rules are also, or may be too often, very opaque for non-specialists, but this is not a reason for their non-publication but, on the contrary, a situation that makes total transparency even more necessary, as a means of ensuring that they can at least be potentially available to any potential specialist in the field with the capacity to understand and comprehend both the content of the regulation and its implications, as well as to detect possible errors in it.

It has also pointed out some precedents, such as industrial standardisation, of regulations which our legal systems have accepted should not be published in full –or, rather, of examples of private standards and payment standards, if any– but it should be remembered that in these cases the solution in most countries and within the European Union is that if these standards are assumed by the State and coercively imposed as technical standards that go beyond the private will to be incorporated into a standardisation structure, in such a case, the complete publication of the standard is always inexcusable¹⁰⁴. Therefore, it does not make any legal sense to claim that a different criterion should be applied in this case.

However, current European regulations are clearly oriented towards this restrictive approach, as we have already seen. On the one hand, the algorithms are not recognised as regulations, so that their possible publication depends solely on the rules of transparency, which allow the mentioned exceptions; or on the requirements in the field of data protection which oblige public administration to inform, at least, of the internal logic which is being used by the algorithm, but nothing more. On this basis, it is intended, at least indirectly, to improve the control and the possibilities of control and monitoring, but it is a question of residing in experts, usually with the consideration that only expert knowledge can operate this control effectively¹⁰⁵, applying the considerations that are already being made about algorithmic ethics¹⁰⁶. Along the same lines,

¹⁰¹ C. M. Romeo Casabona, *Riesgo, procedimientos actuariales basados en inteligencia artificial y medidas de seguridad*, in *REDS*, 13, 2018, 39-55.

¹⁰² M. Ananny and K. Crawford, *Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability*, in *New Media and Society*, 20(3), 2018, 983-985; J. Zerilli, A. Knott, J. Maclaurin and C. Gavaghan, *Transparency in Algorithmic and Human Decision-Making: Is There a Double Standard?*, in *Philosophy and Technology*, 32(4), 2018, 661-683.

¹⁰³ P. B. De Laat, *Algorithmic Decision-Making Based on Machine Learning from Big Data: Can Transparency Restore Accountability?*, in *Philosophy and Technology*, 31(2), 2017, 1-17.

¹⁰⁴ J. M. Baño León, *Los límites constitucionales de la potestad reglamentaria*, 211-216; V. Álvarez García, *Normalización industrial*, in *Diccionario de Derecho Administrativo*, S. Muñoz Machado (dir.), Madrid, Editorial Iustel, 2005, 1672-1675.

¹⁰⁵ M. Ananny and K. Crawford, *Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability*, 987.

¹⁰⁶ L. Cotino Hueso, *Ética en el diseño para el desarrollo de una inteligencia artificial, robótica y big data confiables y*

recent regulatory principles of the European Parliament on the matter are included, which are also very weak in this sense and which are among those who propose as appropriate solutions, rather than total transparency equivalent to legal regulations, complex mechanisms of expert review and public audit¹⁰⁷, with the possibility even of creating a sort of independent administration in charge of ensuring the correctness of the algorithms used by public bodies¹⁰⁸ and a certain tendency to consider that access to source codes should be restricted to public authorities, where appropriate¹⁰⁹. This solution, again, although it could be useful for public control of the use of algorithms by private agents –and could even be a clear improvement on the current regulation based solely on the application of transparency and data protection rules– is clearly insufficient with regard to the algorithms used by public authorities.

This unsatisfactory situation means that, as long as algorithms that perform these same functions are not considered equivalent to regulations, that even the complete publication of the code is not mandatory in European law, even though is a very common opinion among scholars that this publication must always be required in these cases¹¹⁰. For instance, in Spain, as we have seen, the current legal framework allows the possibility of not publishing the algorithms applied by the administration to citizens is still guaranteed as soon as, for example, reasons related to the intellectual property of the code appear –the *Civio* case already mentioned–, but also for many other reasons. *VioGén*¹¹¹ algorithm designed to alert in

cases of gender violence it is also not understood to be disseminated because there is another exception, concerning the possibility not to provide data that may put at risk the investigation or prosecution of crimes or even administrative offences. In this case, opacity is accepted on the grounds of effectiveness¹¹². This situation shows why to act solely on the basis of requirements derived from the rules of transparency is frankly insufficient¹¹³ and leads us to a situation that can only be considered legally unsatisfactory. Something that would simply be overcome by assuming that algorithms in such cases act materially as regulations and therefore they must also be treated as such for these purposes.

Basically, as has already been pointed out, the reasons for accepting this state of affairs are alien to the law and its logic. They have less to do with legal reasons than with economic ones, on the one hand; on the other, they are a direct consequence of the aforementioned loss by the public sector of almost all control over innovation, which is increasingly the responsibility of the private sector. This means that the cost of applying these requirements is significantly higher than the cost of not applying them, and that public administrations prefer to operate in this way, in serious bankruptcy of the most basic and key legal institutions and guarantees of our system, simply because they do not want to assume the delay with respect to the most advanced technological possibilities –or the higher cost that would be involved in having to pay for the ownership of the programme and not only for a licence to use it– compared to the acceptance, against all legal evidence, that complete publication is not so necessary.

In view of this situation, it must be pointed out that legal guarantees are not necessarily cheap. Indeed, they have never been cheap. Neither those proposed here nor the traditional ones. And it must also be remembered that, even if they are costly, their non-respect often entails more costs in the medium and long term. The legal guarantee of the effective possibility of reviewing the source codes in their entirety by any citizen is essential to allow scrutiny not only by the involved individuals, but also by third parties, potentially allowing an audit to be carried out by any person –and also by any

su utilidad desde el Derecho, in *Revista Catalana de Dret Públic*, 58, 2019.

¹⁰⁷ C. Velasco Rico, *La ciudad inteligente: entre la transparencia y el control*, in *Revista General de Derecho Administrativo*, 50, 2019, 20-23.

¹⁰⁸ A. Tutt, *An FDA for algorithms*, in *Administrative Law Review*, 69(1), 2017, 84-123; W. Hoffmann-Riem, *Big data. Desafíos también para el Derecho*, 155-156.

¹⁰⁹ P. B. De Laat, *Algorithmic Decision-Making Based on Machine Learning from Big Data: Can Transparency Restore Accountability?*.

¹¹⁰ M. Veale and I. Brass, *Administration by Algorithm? Public Management meets Public Sector Machine Learning*, 134-136.

¹¹¹ The Comprehensive Monitoring System for cases of Gender-based Violence (*VioGén*), which was launched in 2007 in compliance with the provisions of LO 1/2004 on Comprehensive Protection Measures against Gender-based Violence, among other measures, is probably the best-known example of the use of a predictive algorithm by the Spanish administration. Together with the task of collecting and analysing information, this is introduced into an ad hoc designed programme that issues predictive alerts when, based on the risk assessment made by the algorithm, it is considered that there may be a high risk of an incidence or event that could put a victim at risk. However, data on its specific operation in order to be able to carry out an assessment of it are scarce and, of course, the Ministry of the Interior, on which the system and the programmes and

algorithms used depend, does not give access to them. For further information, please consult the *VioGén* System website: <http://www.interior.gob.es/web/servicios-ciudadano/violencia-contra-la-mujer/sistema-viogen>

¹¹² T. Zarsky, *The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making*.

¹¹³ A. Cerrillo i Martínez, *Com obrir les caixes negres de les Administracions públiques? Transparència i rendició de comptes en l'ús d'algoritmes*, 18-22; R. Martínez Martínez, *Inteligencia artificial desde el diseño. Retos y estrategias para el cumplimiento normativo*, 74-75.

expert— and constitutes a vital element in order to have an effective and complete understanding of the functioning of the algorithms used by the public authorities¹¹⁴). Only in this way can we aspire to an audit that is sufficiently demanding to be able to confirm us that we have at our disposal all the possibilities that allow us to unravel how exactly the programmes applied by the public authorities work and to detect. Also, this degree of transparency is nothing shorter than what we need to identify or report possible errors between the values and purposes pursued by the algorithms and their actual implementation and whether it conforms unwanted statistical or probabilistic biases introduced by the programme, possible discriminations or, simply, some errors.

In fact, the social cost of not allowing this examination is probably much greater in the end than that of assuming a certain delay as the Administration adapts technologically to do so by respecting these traditional rules, given the potentially harmful effects of the already well-studied algorithms in many areas of the Administration. Especially if we give value, as our systems do, to principles such as the precautionary principle, legal certainty and traditional guarantees to protect citizens, including equality before the law. From this point of view, again, it has to be pointed out that this traditional guarantee not only needs to be applied in full to the algorithms, but it is particularly important that it be so because of the potential risky effects for minorities because of algorithm bias otherwise impossible to detect. For all this, it is again very convenient from a legal point of view to assume that these algorithms, these computer programs, act and operate, simply, as regulations and that as such they have to be treated, being published in their entirety. The best way to achieve this, again, is through the legal assumption of their normative and regulatory nature.

This conclusion is consistent with the idea that our legal systems should proclaim a right on the part of citizens to obtain all the information that allows the identification of the means and applications used by the body under whose control the operation of the application or the information system remains¹¹⁵. It must also include in its object not only knowledge of the result of the application or information system that specifically affects its circle of interests but, in addition and above all, the origin of the data used and the nature and scope of the processing

carried out, that is, how its operation may give rise to a certain result. It is also coherent with those positions that have claimed to assume full normative value of the regulations for the purpose of guaranteeing full publicity of the code¹¹⁶. This is most probably the aspect on which it will be easiest to find agreement, even though it is not this conclusion that has yet been adopted by the very unsatisfactory and insufficient legal framework in force. Moreover, once again, it has to be said that in *algorithmic* matters transparency is not in itself sufficient but would have to be accompanied by additional mechanisms of public control or *algorithm tinkering*¹¹⁷, given the enormous complexity and challenges involved in algorithmic transparency and the existence of certain difficulties of complete understanding by merely human intelligences¹¹⁸.

However, the consideration of algorithms as regulations has the advantage, as has been already mentioned, of allowing us to go well beyond this single issue. This is important because, although exact, concrete and detailed knowledge of any normative codification, of the specific algorithms used either to adopt decisions or as tools to assist in their adoption, is absolutely essential also in relation to them the third of the traditional guarantees linked to regulatory standards: the right to appeal not only against any decision based on the regulations in question for not complying with the rules in force and being a result contrary to law, but also the right to be able, both directly or abstractly, and indirectly, to seek remedies against the normative codification itself—the actual regulation— on which a particular decision is based. The translation of these guarantees would allow the possibility of attacking the computer programming of the specific algorithm that we are using¹¹⁹.

3.3. Remedies

As it is well known, a common legal guarantee in the legal systems of our environment, is the possibility of direct or indirect remedies against suspected illegal

¹¹⁴ W. Hoffmann-Riem, *Big data. Desafíos también para el Derecho*, 148-151; K. Yeung, *Why Worry about Decision-Making by Machine?*, 28-29.

¹¹⁵ J. Valero Torrijos, *Innovación tecnológica e innovación administrativa*, presentation at *Seminario de Teoría y Método del Derecho Público*, 2016.

¹¹⁶ J. De la Cueva, *Código fuente, algoritmos y fuentes del Derecho*; J. Ponce Solé, *Inteligencia artificial, Derecho administrativo y reserva de humanidad: algoritmos y procedimiento administrativo debido tecnológico*, 34.

¹¹⁷ K. Freeman, *Algorithmic Injustice: How the Wisconsin Supreme Court Failed to Protect Due Process Rights in State v. Loomis*, in *The North Carolina Journal of Law and Technology*, vol. 10, 2016, 113-115; M. Perel and N. Elkin-Koren, *Black Box Tinkering: Beyond Disclosure in Algorithmic Enforcement*, in *Florida Law Review*, 69, 2017, 181-222.

¹¹⁸ T. Scantamburlo, A. Charlesworth and N. Cristiniani, *Machine Decisions and Human Consequences*, 72-73.

¹¹⁹ P. Daly, *Artificial Administration: Administrative Law in the Age of Machines*, 18-21.

regulations, in order to verify that they are in line with the legal framework and the values it conveys, not only in a general and abstract sense, but also with regard to their concrete application¹²⁰. This guarantee has all the sense also for the AI tools and algorithms that perform materially normative functions, and there would be no problem if, simply, as we have been maintaining in this paper, these were materially recognised as regulations to allow its extension. Moreover, it would not be difficult to implement it procedurally, unlike what would happen if we had to devise a different control and guarantee regime derived from the provisions of European GDPR.

The advantages of allowing this type of control are obvious and immediate. With very little effort in legal innovation, simply by transferring the legal framework that we already have for regulations, we would have a diversified and de-concentrated *ex post* control instrument that would allow us to control whether the specific codification with which the Administration acts, as is the case with regulations and indirect resources at present, is in accordance with the law, but also whether or not it complies in practice with the objectives and purposes that are legally and constitutionally required of it. Furthermore, the use of this possibility allows for the detection and correction of those errors that become evident through application practice in a faster and more efficient manner, expunging from the legal system those errors that are verified in practice as not meeting the required standards. A generous understanding of the algorithms as regulations, therefore, would undoubtedly provide a much-needed tool for *nomophilaxis* with respect to *code 2.0*. And, again, it is sufficient to simply assume that we are dealing with regulations to allow recourse to these much-needed legal instruments of control.

4. Provisional conclusion and refutation of some usual criticisms

The position defended in this paper considers, and has tried to argue, not only that the algorithms or computer programs used by the public administration for decision-making operate as *de facto* regulations but also that it is absolutely logical, and with very positive effects, to transfer, export or translate the traditional guarantees –all of them– that our legal systems establish for regulatory standards to the legal framework related to the use of decision-making algorithms by public powers. As we have already

explained, we refer, obviously, not to any computer program, which can sometimes be merely instrumental, but to those that are used to take administrative decisions or that are essential support to them, either when assessing the concurrent circumstances –identification of the factual assumption¹²¹–, or when providing assessments or elements of judgement on what might be the best and most appropriate measure to adopt determination of legal consequences¹²². It is in these cases that AI tools or its algorithms must be considered equivalents to regulations, since their material function is strictly equivalent to the legal codification in which they are often integrated or which, in many other cases, they gradually aspire to replace.

Consequently, algorithms must be covered by the same legal guarantees that we have traditionally granted for the exercise of regulatory power. This does not mean, of course, that those traditional rules and guarantees do not sometimes need to be adapted or reworked in terms of how they are specifically articulated, but this must always be done with the aim of preserving their material orientation and the resulting balance, allowing the use of these tools as long as they are used in a way that is materially respectful of citizens' rights and guarantees. Thus, it may sometimes be that translation into the new language, adaptation to the new technological environment and to the social and economic realities generated by it, requires some slight modulation. Obviously, nothing in good logic, or even in law, prevents us from acting in this way. However, the need to make these adaptations is proving to be surprisingly exceptional for the time being. At least, the modulations that are currently seen as essential for the operational application of this legal criterion are, for the time being and in the current technological context, remarkably rare. This is a clear and simple statement: it would be perfectly possible today to establish directly in our administrative procedural law –within the European Law tradition– that the algorithms of AI tools used to take administrative decisions or that influence them, either in the identification of the factual situation or in the determination of the legal consequences, are regulations and as such have to be treated to all intents and purposes.

With only this assumption, transformation would be possible overnight without major changes to our legal system –although it would obviously require certain organisational changes

¹²⁰ E. Melero Alonso, *Reglamentos y disposiciones administrativas: análisis teórico y práctico*, Madrid, Lex Nova, 2005, 422-427; S. Muñoz Machado, *Tratado de Derecho Administrativo y Derecho Público General*, 1299-1312.

¹²¹ J. M. Rodríguez de Santiago, *Metodología del Derecho administrativo. Reglas de racionalidad para la adopción y el control de la decisión administrativa*, Madrid, Marcial Pons, 2016, 35-38.

¹²² J. M. Rodríguez de Santiago, *Metodología del Derecho administrativo. Reglas de racionalidad para la adopción y el control de la decisión administrativa*, 63-67.

and the deployment of new units, as well as some expenditure on technology, none of which has anything to do with the structural operating scheme of our administrative law—. No conceptual or structural difficulties stand in the way of the adoption of the measure. A measure, moreover, whose consequences in terms of better protection of citizens' guarantees and rights would be very positive, immediate and considerable.

Against this rather obvious conclusion, conceptual reasons are often put forward to the effect that regulations and algorithms are fundamentally different things, at least after taking into account the possible very disparate nature and functions of the algorithmic tools at the disposal of the public administration¹²³, and that their legal nature must therefore be treated in a differentiated manner. I think we have already made it quite clear that this view is not in keeping with the reality of the material functions that each of those instruments fulfils, so it is not worth paying more attention to this issue, which can be considered as settled.

Perhaps it is necessary, however, to end this reflection by briefly reporting other relatively frequent objections to the position defended in this paper. Objections mainly of a practical or operational nature that can be listed in three essential counter-arguments which, at least in my opinion, are also easily refuted.

The first of the criticisms has to do with some of the economic and opportunity considerations we have already referred to throughout these reflections. In this respect, it is usual to appeal to the cost, which is estimated to be very high, in which public administrations would incur if they adopted a criterion such as the one defended here. In fact, it is true that the cost of using any licence is always much lower than the cost of purchasing the algorithm or the cost derived from its design by the administration itself. However, a criterion such as the purely economic one is, in my opinion, not sufficient to dismiss the arguments provided. Firstly, because it does not fundamentally refer to the essence of the issue or deny the conclusions defended here but simply, even accepting them, considers that "we cannot afford" in this new technological context the level of guarantees that our Law had established as necessary with respect to the previous technological paradigm. This is not really satisfactory.

Furthermore, just as there is a trade-off between better protection and guarantee of our rights and the possibility of enjoying the most advanced technology in this and other areas at a better price, it is debatable whether the optimum

balance point is one that allows us to always enjoy the latter even at the expense of the former. This is basically a question of social preferences and there are reasons to argue that rights and guarantees are much more important than the immediate use of the most advanced technology. One indication of this, without going any further, is to point out an evidence that is hardly questionable: it does not seem that most of the algorithms used today by public administrations are precisely examples of technology that is so expensive and advanced that it would be economically untenable to purchase them or, failing that, to employ a technological development carried out by the public authorities themselves.

Paradoxically, and this is the second most common argument to criticise the appropriateness or necessity of applying to algorithms the legal guarantees usually associated with regulatory standards in our law, are those who directly question the need for complete and total knowledge of the source code. This refutation alleges that technically complex nature of AI tools and the enormous difficulty for any normal person to understand their algorithms make it practically indifferent to have complete effective access to it or not, especially in neural network/machine *learning* environments where the *black box* phenomenon occurs more acutely¹²⁴. However, in the face of this thesis, it must be reiterated, as we have already argued, that in these cases the need for access to the code is even greater in order to be able to know and to understand the ultimate foundations and principles on which the codification made and its premises are based –and thus be able to identify whether they are coherent with the aims supposedly being pursued, for example, or whether there are risks of deviation from them—. This is a question that is otherwise considered and essential in these domains, and even more so than in others precisely because a complete, duly exhaustive analysis of it is practically the only effective control mechanism that we can have over the algorithm in possible future environments of very high indetermination about the results derived from the application of the algorithm. It is interesting that this idea is something in which we have seen that there is great agreement among specialists in artificial intelligence, which makes even more odd the emphasis of some legal scholars proclaiming the non-importance of knowing the actual source code. Instead, is commonplace among AI specialists to stress the urgent need to guarantee the greatest possible control over this phase. To

¹²³ A. Huergo Lora, *Una aproximación a los algoritmos desde el Derecho administrativo*, 64-67.

¹²⁴ J. Burrell, *How the machine 'thinks': Understanding opacity in machine learning algorithms*, in *Big Data and Society*, 3(1), 2016.

achieve this, publicity in equivalent terms to that granted for regulations, but also compliance with the rules for their rigorous preparation or recognition of the possibility of applying all direct and indirect ex-post controls to them, seems absolutely essential.

Finally, in what does constitute a critical argument of greater legal interest, it is sometimes argued that complete access to the programming of certain algorithms –for example, those dedicated to inspection and control of illegal activities– would facilitate breaches of the law. This is a valid argument, since the possibility of misleading the rules (*game the system*) is obviously greater the more information one has about it¹²⁵. Moreover, this possible issue does not only affect the legal-public sphere, but can also appear with respect to legal-private relations – publishing the algorithm that calculates the premium for an insurance policy can lead potential clients to try to select data or change some conducts to alter the result in their favour– although in these cases the problems associated with this question are different. Among other things, because, as these are private treatments, advertising is not necessarily a requirement in these matters, unless there are public interests at stake or it is necessary to avoid some kinds of particularly serious discrimination prohibited by law. To sum it up, this claim is completely legitimate and, in some aspects, a valid one.

However, it must be remembered that this problem is not in itself, and in essence, strictly new. Our legal system has already solved this same issue for traditional environments of administrative action and we have long date rules to make, for instance, explicit which parts of inspection programmes are to be published and which are not. These rules seek to strike an adequate balance between the guarantees of publicity and a proper framing of control activities, which is important in order to prevent excesses and arbitrariness; and the need to hide the specific details of the inspection schedule, its programming or the key elements that ultimately determine which immediate controls are to be carried out, to which people and for what reasons. The most common solution has been in most legal systems to allow very general proxy clauses in their regulatory legal framework¹²⁶.

To this end, nothing could be simpler than transferring the already consolidated solutions to the new algorithmic environment: we would have to make a distinction between decision-making and preventive analysis algorithms and, simply, apply to the latter a translation of the

solutions established in our inspection legal regimes for equivalent areas in non-electronic environments –inspection plans, for example, or control activity programming¹²⁷.

In conclusion, I believe that these counterarguments can be considered unsatisfactory in general terms, insufficient and not able to question the conclusion defended in this paper, both in terms of its theoretical correctness but also regarding the possibility and practical convenience of deploying them in all their dimensions. None of these criticisms manage to question the basic conclusion of this work, nor its conceptual and functional basis, which simply, but no less, obliges us to consider that our Law must treat the algorithms and programs used by the Administration to predetermine its actions in what affects citizens as what they are: normative codification, that is, something equivalent in their effects to old regulations. Therefore, we must apply consequently –duly translated, when necessary– all the guarantees that our legal system has been creating over time with respect to regulations to properly frame when and how the use of algorithms by our public powers to help –or to make– decisions that may affect citizens' rights may be deemed as legally possible.

¹²⁵ T. Scantamburlo, A. Charlesworth and N. Cristiniani, *Machine Decisions and Human Consequences*, 73-74.

¹²⁶ M. Rebollo Puig, *La actividad inspectora*, in *La función inspectora*, Asociación Española de Profesores de Derecho Administrativo, 2013, 67-69.

¹²⁷ M. Rebollo Puig, *La actividad inspectora*, in *La función inspectora*, 108.

