Nudge Regulation and Technological Management according to a Constitutional Law Perspective

Nadia Maccabiani – Department of Economics and Management – University of Brescia

ABSTRACT: *Taking inspiration from the transformations of law as a reaction to "exogenous" factors, this paper focuses on two regulatory techniques: nudge regulation and technological management. While briefly describing their main features, the aim is to highlight two aspects that, in the author's opinion, require further consideration from a constitutional perspective: one concerning individual freedoms, and the other concerning the relationship between powers (i.e. legislative and executive).*

1. Following the transformative path of law

Multiple transformations that impinge upon the classical way to understand law occur, mostly as a reaction to exogenous factors.

The transformation can undoubtedly and primarily be substantive in nature, representing the evolution of the legal system aimed at keeping pace with economic, social, scientific, and technological developments in order to better "govern" them. This process tests the "resilience" of legal categories in the face of emerging "innovations" and may lead to the development of new categories if the existing ones prove inadequate[1].

In parallel, the transformation can also concern the way competent authorities implement their decision-making process in order to better cope with these evolving (economic, social and technological) phenomena, giving rise to different regulatory techniques.

According to this further perspective of transformation of law, science-based laws come into question: the public regulator limits the scope of its legislative margin of manoeuvre based on scientific findings. In this case, the rule does not follow the classical "format" of the imperative hypothetical period (if it is A, then it is B) but a different model, that is typical of technical rules (if B is the target, A is the mean to reach it out)[2]. Scholars have referred to this as a sort of "reverse law" and required transparency of the procedures technical expertise is gathered by the legislator[3].

Moreover, in response to "new" risks, beyond those related to market failures traditionally addressed through ex-post regulations, a sort of risk-regulatory State took place[4]. This, in turn, led to the emergence of techniques different from the traditional "command and control" approach, and a

---

[1] As observed by E. PALMERINI, *The interplay between low and technology, or the RoboLaw project in context,* in E. PALMERINI, E. STRADELLA (eds.), *Law and Technology – The Challenge of Regulating Technological Development,* Pisa University Press, Pisa, 2013, p. 15, «if we tried to sketch the key features of the regulatory enterprise faced with modern techno-science, we would come across multiple antitheses, revealing a double-edged dimension entwined in the plea for regulation. The very origin of these opposing trends resides in an ambiguous attitude towards the governance of science-centred issues, where there is no clear-cut answer even to the basic question of whether technology should or should not be regulated and to what extent the law needs to follow and adjust to technological change». R. BROWNSWORD, E. SCOTFORD, K. YEUNG (eds.), *The Oxford Handbook of Law, Regulation, and Technology*, Oxford University Press, Oxford, 2017, provide a comprehensive overview of the challenges posed by scientific and technological developments to various policies and the potential solutions that can be adopted or are adoptable by the public regulator.

[2] N. IRTI, *Il diritto nell'età della tecnica,* Editoriale Scientifica, Naples, 2007, p. 17.

[3] A. IANNUZZI, *Il Diritto capovolto – Regolazione a contenuto tecnico-scientifico e costituzione,* Editoriale Scientifica, Naples, 2018, p. 149

[4] As assumed by J. BLACK, *The role of risk in the regulatory process,* in R. BALDWIN, M. CAVE, M. LODGE (eds.), *The Oxford Handbook of Regulation*, cit., p. 302, after the welfare state and the regulatory state, it is now the turn of a risk regulatory state, in which «risk is not just being used to define the object of regulation, it is also being used to determine the boundaries of the state's legitimate intervention in society. Government's role is to manage risk, and it is justified in intervening in society in the pursuit of that objective».

concept known as "smart regulation" was introduced[5], involving a plurality of regulatory regimes, not just driven by government entities but also by businesses and NGOs, who participate through co-regulation and self-regulation. This led to the concept of meta-regulation, wherein regulators focus on stimulating self-organization within firms to encourage critical self-reflection about their regulatory performance, rather than imposing prescriptive standards[6].

Against this backdrop, it is the principle of legal certainty that fades, further fuelling what doctrine had already denounced as the "crisis of the case" and the "incalculability of the law"[7].

Furthermore, going ahead along the tracked path about the transformation of the classical way law is understood, there are also cases, which we will address in this paper (nudge regulation and technological management, see infra §§ 2 and 3), where the law's response to exogenous changes results not so much in changes aimed at "ruling" on these external phenomena and better coping with their reality, but rather in their "exploitation" to increase the achievement of objectives that traditionally belong to the law itself (the shaping of human behaviour). In these scenarios, the public regulator adopts an evidence-based regulatory technique, seeking to "taking advantage" of the evidence and advancements of scientific and technological evolution that prove to be supportive for greater effectiveness and efficacy of the legal norm[8].

Therefore, while science-based laws and smart regulation primarily solicit the traditional format of the legal norm, with nudge regulation and technological management, the legal norm, besides being typified differently (compared to the classical imperative hypothetical period), also sees its traditional scope extended. Specifically, in the first case (science-based laws and smart regulation), the definiteness of the case fades, while referring to notions (scientific) or acts (self-regulation and co-regulation) external to it; in the second case (nudge regulation and technological management), the norm aims at encompassing a part (its execution) that traditionally is out of it, thus extending its scope to effectiveness and efficiency, which have traditionally been the focus of sociology rather than legal sciences.

These transformations in the law not only raise interesting theoretical and philosophical questions but also have constitutional implications. Firstly, since the law shares, with science and technological advancement, the nature of "technique" and the goal of dominion over people and nature[9], as a consequence their combination (law and science) raises concern about a relevant potential multiplication of power, which hits the core of modern constitutionalism, born in order to limit state power and to protect liberties and rights[10].

---

[5] N. GUNNINGHAM, P. GRABOSKY, *Smart Regulation: Designing Environmental Policy,* Oxford University Press, Oxford, 1998.

[66] N. GUNNINGHAM, *Enforcement and compliance strategies,* in R. BALDWIN, M. CAVE, M. LODGE (eds.), *The Oxford Handbook of Regulation,* cit., p. 135.

[7] N. IRTI, *Un diritto incalcolabile,* Giappichelli, Turin, 2016, pp. 19 ff.

[8] F. DI PORTO, N. RANGONE, *Behavioural Sciences in Practice: Lessons for EU Rulemakers,* in A.L.SIBONY, A. ALEMANNO (eds.), *Nudge and the Law – A European Perspective,* Bloomsbury, Oxford-Portland-Oregon, 2015., p. 30: «cognitive insights should be taken into account when designing a regulatory response in a particular context. This may require revisiting traditional regulatory tools (to make rulemakers more aware of possible unresponsive behaviours), as well as creating new strategies, that are therefore named 'cognitive-based'».

[9] N. IRTI, *Il diritto nell'età della tecnica,* cit., p. 17.

[10] V. ONIDA, *Costituzioni e costituzionalismo,* in *L'incidenza del diritto internazionale sul diritto civile – Atti del 5° Convegno nazionale della Società Italiana degli Studiosi del Diritto Civile,* Edizioni Scientifiche Italiane, Naples, 2010, p. 474, remembers that the principles on which modern constitutionalism is based are far from being specific to one state or one people. On the contrary, they express explicitly universal values, founded on a vision of humanity and the world inspired by specific ideal and ethical postulates: the equality of all human beings among themselves; the recognition and guarantee of the inviolable rights of individuals and social formations; the orientation of power towards tasks of justice;

Secondly, this transformative path of law deserves constitutional attention since constitutional law has a history of integrating different disciplinary contributions. It has done so with the philosophy of law, incorporating its axiological function in the form of principles and fundamental rights; it has also done so with sociology and political science, translating the reasons behind factual behaviours into "reasons of law"[11]. As a consequence, it might now be necessary to consider how technological and scientific advancements can further innovate the potential actions of public regulators, aimed at shaping and controlling human behaviour, while ensuring their compatibility with constitutional guarantees (like fundamental rights, legality principle, principle of legal reserve, legal certainty principle).

In the following sections, after briefly describing the techniques of nudging and technological management to understand how scientific and technological advancements can strengthen the regulator's tools in respect of regulatees, attention will be focused on some constitutional concerns. The pivotal issue for constitutional law concerns the "effects" of these tools on fundamental freedoms and the need to consolidate existing safeguards concerning the organization of public powers, namely the legislative and executive branches.

2. Behavioural science and nudge regulation

Bobbio upheld an interdisciplinary approach, calling for cooperation between legal scholars and social scientists[12]. This necessity is even more essential against nowadays developments, with specific regard to behavioural sciences, since they share the same object with law: both fields look at the humans and their behaviours: the latter regulates human actions and their consequences (imposing, prohibiting, favouring or permitting them), while the first can help to better understand what drives human decisions, what lies behind the human behavior (on which law focuses), the free and conscious decision-making (that law postulates)[13].

Advancements in knowledge about the human cognitive and behavioural system have contributed to highlighting the cognitive errors (biases) that affect individuals, thus debunking the neoclassical theory of inherent rationality in the *homo economicus*, which assumes optimal decision-making and actions to maximize personal utility[14]. As a consequence, these developments have also enhanced understanding of the tools for influencing and conditioning human behaviour[15]. In this last regard, the relevance of the context in which options are presented has proved to condition individuals, as it can influence their mental processes, impact their preferences, and consequently, their behavior. In this regard, several tools capable of "conditioning" individual decisions have been suggested, including the default rule (leveraging inertia towards predetermined choices, requiring active

---

furthermore, the establishment of authority based on the consent of the community, and the limitation and division of sovereign powers to prevent arbitrariness.

[11] L. FERRAJOLI, *La costruzione della democrazia – Teoria del garantismo costituzionale*, Editori Laterza, Bari-Rome, 2021, p. 6.

[12] N. BOBBIO, *Dalla struttura alla funzione – Nuovi studi di teoria del diritto,* Laterza Editori, Bari-Rome, 2007, p. 43.

[13] A. D'ALOIA, *Neuroscienze e Diritto – Appunti preliminari,* in *BioLaw Journal,* n. 3/2017, p. 1.

[14] A.L. SIBONY, A. ALEMANNO, *The Emergence of Behavioural Policy-Making: A European Perspective,* in A.L. SIBONY, A. ALEMANNO (eds.), *Nudge and the Law – A European Perspective,* Portland, 2015, p. 3, «the central findings of behavioural research that are of interest to policy-making may be summarised in four statements: i) humans display a tendency to inertia and procrastination; ii) they are very sensitive to how information is presented (framing); iii) as well as to social influence; and iv) humans do not handle probability very well». For an in-depth overview of the limits that affect human rationality, see F. VELLA, *Diritto ed economia comportamentale,* Il Mulino, Bologna, 2023, cap. I.

[15] N. RANGONE, *Errori cognitivi e scelte di regolazione,* in *Analisi giuridica dell'economia,* n. 1/2012, p. 2.

behaviour for opting-out)[16]; information presented in a particular format (frame) aimed at capturing the individual's attention and focusing it on certain aspects rather than others[17]; and informational simplification. These are tools susceptible to "exploiting" individual cognitive biases or overcoming them, thus enhancing their cognitive and deliberative abilities (empowerment)[18].

Against this backdrop, Thaler and Sunstein have built up their nudge theory that rests on the concept of "libertarian paternalism". It is a relatively mild, indulgent, and non-intrusive form of paternalism because choices are not blocked, prevented, or made excessively burdensome. In this respect, choice architects try to influence individuals' behaviours to make their lives longer, healthier, and better. It is libertarian because, in general, individuals should be free to do as they believe, their freedom is preserved. Thus, Libertarian paternalists want to help people do what they think is best. In essence, "a nudge" is any aspect of the choice architecture that alters people's behaviour in a predictable way, without forbidding any option or significantly changing the economic incentives. To qualify as a mere nudge, the intervention must be easily avoidable and without excessive costs[19].

The resulting regulatory technique transcends both, the classical type of prescriptive legal norm, characterized by an imperative deontic period, and the schema of permissive norm[20]. Moreover, nudge regulation aims to incorporate and ensure, through the "forms" (what Sunstein and Thaler call the choice architecture), elements that usually lie outside the legal norm, dealing with its efficiency and effectiveness[21]. Nudging has therefore been described as a kind of "third way," between State rules and market rules[22]. Despite this, when dealing with nudging we're not facing a mere "practice" but one of the way the public regulator can decide to deploy its functions in order to perform its task of conforming people's conduct[23].

In this last respect, it is worth recalling that the features of the nowadays information society, with its vast amount of data, that are more easily processed due to increased computational power and new algorithms, are fostering the potentiality of a behaviourally informed regulation[24]. Indeed, while

---

[16] R.H. THALER, C.R. SUNSTEIN, *La spinta gentile – La nuova strategia per migliorare le nostre decisioni su denaro, salute, felicità,* cit., p. 95.

[17] R.H. THALER, C.R. SUNSTEIN, *La spinta gentile – La nuova strategia per migliorare le nostre decisioni su denaro, salute, felicità,* cit., p.45.

[18] F. DI PORTO, N. RANGONE, *Behavioural Sciences in Practice: Lessons for EU Rulemakers,* cit., p. 30, distinguish «'nudging' and 'empowerment'. Although both are based on similar cognitive insights, we contend that while 'nudging' is meant to 'exploit' individual emotional responses, 'empowerment' is aimed at enhancing people's capacity to manage and overcome their emotional responses, in order to adopt deliberately conscious decisions».

[19] R.H. THALER, C.R. SUNSTEIN, *La spinta gentile – La nuova strategia per migliorare le nostre decisioni su denaro, salute, felicità,* cit., pp. 11-12.

[20] G. PINO, *Teoria analitica del diritto I – La norma giuridica,* ETS Edition, Pisa, 2016, pp. 66 ff. Nudge has been definite as a «rule-free regulation», that means «a regulation "without deontology" in that it is a kind of regulation that aims to influence and modify human behaviour by operating in an adeontic sphere, a sphere devoid of any form of intrinsic deontology. It is a form of regulation which does not require deontological categories, usually considered indispensable for the existence of law itself, such as bans, obligations, commitments, rights, responsibilities, duties, privileges, entitlements, penalties, permissions, authorizations», G. LORINI, S. MORONI, *Rule-free regulation: Exploring regulation 'without rules' and apart from 'deontic categories'*, in *Journal for the Theory of Social Behaviour*, 2021, pp. 1 ff.

[21] A. ZITO, *La nudge regulation nella teoria giuridica dell'agire amministrativo – Presupposti e limiti del suo utilizzo da parte delle pubbliche amministrazioni,* cit., p. 81, against a regulation based on the evidence of human conducts, the Author advances the hypothesis to include effectiveness and efficacy as an essential features of the legal system.

[22] E. SELINGER, K.P. WHYTE, *Nudging Cannot Solve Complex Policy Problems*, in *European Journal of Risk Regulation*, n. 1/2012, p. 26.

[23] In this respect, i.e. nudging as a form of public power excercise, see A. ZITO, *La nudge regulation nella teoria giuridica dell'agire amministrativo – Presupposti e limiti del suo utilizzo da parte delle pubbliche amministrazioni,* cit., pp. 85 ff.

[24] R. KITCHIN, *The Data Revolution – A Critical Analysis of Big Data, Open Data & Data Infrustructures,* Sage, London, 2022, p. 203, observes that «dataveillance» is a «key component of modern forms of governance and governmentality».

traditionally, the use of cognitive-based regulatory tools was costly in terms of time and resources[25], the support of data analytics tools can reduce the expenditure, increase efficiency, and enhance the reliability of results compared to experiments conducted in laboratories[26]. Information and Communication Technologies (ICT) can contribute to deepen social and scientific knowledge, refine individual profiling, and extend the extraction, also in a predictive perspective, of their strengths and weaknesses[27].

As a consequence, in the face of digitalization, traditional (analog) nudging receive a twofold reinforcement. On the one hand, through the computerized analysis of data, an enhanced knowledge is delivered to behavioural sciences. On the other hand, the opportunity to "nudge" online, embedding choice architecture and its design within the multiple electronic devices with which individuals constantly interact, make it more pervasive[28]. In this regard, it seems paramount to highlight that the intensity of the interference in the private sphere should be examined by taking into account the multiplying effect of the massive use of electronic means of communication, in particular digital mobile devices and the possibility to record and analyze those data. The deluge of digital data enables public and private organizations that control the data not only to understand better, but also to predict patterns of human behavior[29]. It goes without saying that the enhanced surveillance of human behaviour, further feeds and improves cognitive sciences understanding, and it is – in turn – able to be exploited by (private but also public) power in order to better conform individual conduct. As such nowadays potentiality of nudging regulation results higher and better performing than previously as well as the potentiality of the regulator that makes use of this technique.

3. Technological innovations and technological management

In general, techno-regulation refers to the control of human behaviour through the use of various techniques and/or new technologies. More specifically, it relates to new technologies featured by complex, quick mathematical calculations and the relevant programmed capacity to influence human behaviour by embedding values, norms, and rules within different technological devices[30]. The possibility of integrating, that is, incorporating rules of conduct into computer programming, recalls the well-known "code is law" principle formulated by Lessig[31], as well as the hypothesized substitution of the Rule of Law with the Rule of Code[32]. In essence, through code, understood as the architecture or design of an artificial device, it is possible to make choices that render certain

[25] F. DI PORTO, N. RANGONE, *Behavioural Sciences in Practice: Lessons for EU Rulemakers,* cit., p. 48, highlight that in behavioural science «experiment are time and resource consuming».

[26] M. QUIGLEY, E. STOKES, *Nudging and Evidence-Based Policy in Europe: Problems of Normative Legitimacy and Effectiveness,* in A.L. SIBONY, A. ALEMANNO (eds.), *Nudge and the Law – A European Perspective,* cit., p. 79 e p. 80, remind that «we are lacking data from *well-designed* policy-relevant studies; that is, studies conducted in the real-world which can account for relevant confounding factors or subgroup behaviours».

[27] G. SARTOR, *Human Rights and Information Technologies,* in BROWNSWORD, E. SCOTFORD, K. YEUNG (eds.), *The Oxford Handbook of Law, Regulation and Technology,* cit., p. 431, observes that «these systems can anticipate behaviour and provide information, suggestions, and nudges that trigger desired responses».

[28] A. LE GALL, *Legal Design beyond Design Thinking: processes and effects of the four spaces of design practices for legal field,* in R. DUCATO, A. STROWEL (eds.), *Legal Design Perspectives – Theoretical and Practical Insights from the Field*, Ledizioni

[29] A. ALEMANNO, A. SPINA, *Nudging Legally: On the checks and balances of behavioural regulation,* in *International Journal of Constitutional Law*, vol. 12, n. 2/2014, p. 448.

[30] A.C. AMATO MANGIAMELI, *Tecno-regolazione e diritto. Brevi note su limiti e differenze,* in *Diritto dell'Informazione e dell'Informatica,* n. 2/2017, p. 154.

[31] L. LESSIG, *Code and the Other Laws of the Cyberspace,* Basic Books, New York, 1999.

[32] P. DE FILIPPI, A. WRIGHT, *Blockchain and the Law – The Rule of Code,* Harvard University Press, Cambridge-London, 2018, p. 52 ss.

behaviours more difficult, more costly, or even impossible: which entails a compelling force similar to that of legal rules[33].

Consequently, in respect of the previously discussed nudge-regulation, techno-regulation represents an additional tool that public authorities can resort to as an alternative to traditional forms of enforcement of legal provisions[34], namely negative sanctions (penalties or disincentives) or positive incentives (rewards or encouragements) according to the classic functions of law described by Bobbio (repressive, protective, and promotional).

Specifically, the technology used to immediately give executive form to rules of behaviour has been termed "technological management" by Brownsword: «the use of modern technologies as regulatory instruments… with a view to managing certain kinds of risk by excluding (i) the possibility of certain actions which, in the absence of this strategy, might be subject only to rule regulation, or (ii) human agents who otherwise might be implicated (whether as rule-breakers or as the innocent victims of rule-breaking) in the regulated activities»[35].

Moreover, technology is sometimes invoked as a response to itself, i.e. as protection against the greatest and most pervasive risks that certain rights are exposed to due to technological development: first and foremost, the right to intellectual property and the right to data protection. In these cases, the law delegates to the technology the embedment of certain technical and organisational measures as well as predefined safeguards by programming and structuring the technology itself (i.e. by default and by design) and that will result in an automatic protection of these rights. In this terms it can be said that the information system architecture is endowed with the ability «to shape human conduct in ways that parallel the imposition of law laid down by statute and contract, and to shape conduct more effectively than such law. At the same time, they attempt to improve the bite of legal norms on IPR and data privacy by seeking to build the norms into information systems architecture. An assumption … is that, with such embedment, the automated processes of the architecture will help automate legal norms, thus making the latter largely self-executive. Attached to the assumption is the promise of a significantly increased *ex ante* application of the norms and a corresponding reduction in relying on their application *ex post facto*. The hope is that this realignment of regulatory thrust will ameliorate the 'catch-up-with-technology' problem traditionally afflicting statutory endeavour»[36].

Technological management, therefore, implies that technology acts in place of humans: whigh is increasingly possible due to sophisticated artificial intelligence systems and new technologies in a broader sense (e.g., Blockchain, the Internet of Things) that as such can become an essential part of the normative relationship between governments and citizens. As a result, the "regulatory environment" is composite, consisting of two dimensions: one that follows the traditional normative form and another that follows an innovative "non-normative form" integrated by technological management, which, unlike the former, also incorporates the effectiveness of the norm[37].

Thus, as with nudging, when public authorities decide to rely on this regulatory "form" the choice is not neutral from a constitutional perspective, affecting the relationship between public power, citizens

---

[33] G. MOBILIO, *L'intelligenza artificiale e i rischi di una "disruption" della regolamentazione giuridica,* in *BioLaw Journal*, n. 2/2020, p. 416.

[34] R. CALO, *Code, Nudge or Notice?,* in *Iowa Law Review*, vol. 99, n. 2/2013, pp. 781 ss., also highlights that «laws can be hard to pass and easy to ignore. Regulators are increasingly turning to alternatives to law to influence citizen behavior».

[35] R. BROWNSWORD, *Law, Technology and Society – Re-imagining the Regulatory Environment*, Routledge, New York, 2019, p. 4.

[36] L.A. BYGRAVE, *Hardwiring Privacy*, in R. BROWNSWORD, E. SCOTFORD, K. YEUNG (eds.), *The Oxford Handbook of Law, Regulation, and Technology*, cit., p. 755.

[37] R. BROWNSWORD, *Law, Technology and Society – Re-imagining the Regulatory Environment*, cit., pp. 24 e 29.

and their liberty and autonomy as well as certain fundamental organisational principles (*infra*, §§ 4, 5, 6).

4. Aspects of constitutional relevance: liberty and autonomy

What described in the previous paragraphs provides a short and quick overview for a general understanding of what nudge regulation and technological management entail. Now it is necessary to "test" them under constitutional lenses. Techno-regulation, whether it aims to impact an individual's behaviour (as nudge does) or his/her material sphere of action (as in the case of technological management), puts the traditional concept of "law as a normative guidance"[38] and, consequently, the relationship between the organisational features and the modes of exercise of public power under stress. While the former aspect relates more to general theory and philosophy of law, it is the latter that we will deal with in the following paragraphs, as it is more closely connected to the core of modern constitutionalism (limitation of power and consequent protection of inviolable liberties and rights).

What we are going to argument will primarily concern nudge but can be widened to technological management, given its higher degree of impact on individual autonomy and its possibility to be deployed in forms of "non-libertarian paternalism".

In discussing the use of these regulatory techniques, scholars have first focused on the legitimacy of the pursued objectives, considering them legitimate when aligned with the protection of constitutionally enshrined rights and interests; when aiming to prevent harm to third parties (according to Mill's liberal approach); or when serving a public interest, naturally while respecting the so-called proportionality test (necessity, suitability, and not excessively burdensome nature of the measure)[39]. In this respect, part of the doctrine has stressed how the goal of the libertarian nudging enshrined by Sunstein and Thaler (i.e. the individual's well-being from the individual's perspective) falls into a sort of tautology, leaving the initial assumption unproven[40].

Without diminishing the mentioned doctrinal debate concerning the legitimate purposes that justify the use of regulatory techniques such as nudging or technological management, the point on which attention is intended to be focused is rather the interaction of these techniques on "the autonomy of self-determination" of individuals. It may seem - once again - like a tautology, but, as will be highlighted, the double emphasis on "autonomy" holds meaning and, specifically, a legally relevant sense from a constitutional perspective.

For this purpose, we first start with nudging, which, although declared to be "libertarian," is actually intentionally aimed at influencing the unfolding of human cognitive processes, and not only when nudging tools are deployed in "covert" manner, i.e. by means of subliminal techniques.

Even it is surely true that multiple exogenous factors can influence the cognitive paths of the human psyche (and, ultimately, preferences and choices) [41], however, what characterizes nudging is its

---

[38] P. CSERNE, *Making Sense of Nudge-Scepticism: Three Challenges to EU Law's Learning from Behavioural Sciences*, cit., p.293.

[39] M. SCHWEIZER, *Nudging and the principle of proportionality. Obliged to nudge?*, in K. MATHIS, A. TOR (eds.), *Nudging: Possibilities, Limitations and Applications in European Law and Economics*, cit., pp. 93 ss

[40] M. MIRAVALLE, *Gli orizzonti della teoria del nudging sulla normatività: verso un diritto senza sanzioni?*, in *BioLaw Journal*, n. 1/2020, p. 450.

[41] M. SCHWEIZER, *Nudging and the principle of proportionality. Obliged to nudge?*, cit., p. 100, «the argument that nudges aimed at changing preferences deserve special scrutiny seems to rest on the premise that there are stable preferences that

intentional direction to modify/manipulate these cognitive processes[42], based on a reinforced and structured lever, supported by evidence provided by behavioural sciences[43]. Specifically, it aims to interfere with the cognitive systems that behavioural sciences distinguish between System 1, which is intuitive, emotional, fast, and automatic, and System 2, which is more reflective, deliberative, rational, and slow[44]. It also seeks to exploit cognitive errors (biases) that affect our decision-making processes or correct them (empowering, as seen in § 2)[45].

Bearing in mind this premise, the perspective needs to be shifted to the legal level, to try to understand if and how, from a constitutional point of view, the cognitive sphere with which nudging interacts can be considered worthy of protection, irrespective of the methods through which nudging is implemented (default rule, simplification, framing, etc.) and the sort of legitimate objectives pursued. The essence, from a constitutional perspective, seems to lie "upstream" of methods and objectives, with the latter coming into relevance at a later stage, namely during the balancing process with the affected freedoms.

It is, therefore, necessary to first consider the effects produced on our psychological processes, which the nudging seeks to modify (whether it aims to change final preferences or influence the means at our disposal for making decisions)[46]. Not only the extreme of subliminal action, but even more transparent modes of action, such as informative ones, are intentionally directed by the public regulator to exploit the knowledge provided by cognitive sciences in order to "modify" or "manipulate" the natural pathways of the individual's internal psychological process. Whether these "natural pathways" of the cognitive process are considered "optimal" or not for the well-being of the individual is a separate assessment, which converges on the different question of the pursued objectives (that should become relevant, as said, in the second step of the assessment, when a balance should be stricken between these objectives and liberties and rights involved). Indeed, the cognitive process comes first and as such it deserves to be protected as a sphere of "autonomy" in itself[47].

---

are independent of the decision context, and the psychological literature teaches us that this is not the case. If all preferences depend on context, it is hard to see why one context – for example framing a decision as choosing between losses instead of gains – is more manipulative than another one».

[42] As stressed by doctrine a clear-cut distinction between manipulation and nudging is not easy to define. In this respect, C. MESKE, R. AMOJO, *Ethical Guidelines for the Construction of Digital Nudges*, in *Proceedings of the 53rd Hawaii International Conference on System Sciences*, 2020, pp. 3930 ss., have found out some "indicators" in order to mark the distinction, with particularly reference to transparency «it is the non-transparent types of nudges that fall under the manipulation objection as they work subliminally and are usually not striking to the nudgee».

[43] M. SCHWEIZER, *Nudging and the principle of proportionality. Obliged to nudge?*, cit., pp. 93 ss.

[44] D. KAHNEMAN, *Thinking. Fast and Slow*, Penguin Books Ltd, New York, 2011.

[45] As evidenced by A.L. SIBONY, A. ALEMANNO, *Epilogue: The Legitimacy and Praticability of EU Behavioural Policy-Making,* in A.L. SIBONY, A. ALEMANNO (eds.), *Nudge and the Law – A European Perspective,* cit., p. 333, «the protection of autonomy, which ought to be provided by constitutional rules, needs to be devised in a flexible way so as to allow individuals, business, and public authorities to deal with bounded rationality in the pursuit of their respective legitimate goals. In other words, those concerned with autonomy should not confine their argument to the abstract availability of choices; they should consider the distinct imperative to respect the balance between those decisions we want to take deliberately and those that we prefer to take automatically».

[46] A. VAN AAKEN, *Judge the Nudge In Search of the Legal Limits of Paternalistic Nudging in the EU,* in A.L. SIBONY, A. ALEMANNO (eds.), *Nudge and the Law – A European Perspective,* cit., p. 92, distinguishes between preference paternalism or end paternalism, addressed to target «the formation of preferences and thus autonomy», and cognitive paternalism or means paternalism, «aimed at correcting cognitive errors in order to help people pursue their own preferences rationally». But, differently from our understanding, according to the Author, end paternalism needs to be subjected to greater scrutiny than the latter that respects preferences and autonomy.

[47] A. VAN AAKEN, *Judge the Nudge In Search of the Legal Limits of Paternalistic Nudging in the EU,* cit., p. 90, states that «autonomy is a normative construct which not only reserves a free space for the individual but also determines who is responsible for certain actions… Autonomy… guarantees individuals room for their own choices». Thus, «autonomy is the default standard against which any public intervention should be assessed» and, more specifically, «above a

It is not a case that the notion of cognitive freedom is going to gain momentum in doctrine. It has been understood as «process an individual uses to organize the information he receives, since the mind collects and selects information according to perception, attention, comprehension and memory to guide the behaviour»; therefore qualified as human fundamental right «to control one's own mind: the basic brick of personal freedom»[48]. As a consequence, and because our psychological paths lay the foundation for the exercise of every other right and freedom, they end up finding consecration in the fundamental value of human dignity, as upheld by parts of the doctrine and the Italian Constitutional Court as well.

The "inner sphere", as an intimate component of an individual's psychology, a particularly sensitive realm, must be conceived as an essential prerequisite for cognitive and moral freedom, psychological integrity, and individual self-determination. Scholars have argued for its constitutional relevance, citing various articles of the Italian Constitution (Articles 2, 13, 23, 25, and 32) [49].

The Italian Constitutional Court, in turn, has delved into the description of the concept of individual conscience, defining it as the intimate and privileged relationship of an individual with himself; the spiritual-cultural foundation and the ethical-legal basis of inviolable liberties and rights; a creative principle that makes possible the reality of fundamental human freedoms and the realm of expression of the individual's inviolable rights in social life. Against this premise, the Court has recognized it as deserving protection equivalent to that granted to the mentioned rights, namely a protection proportional to the absolute priority and foundational character attributed to them in the scale of values expressed by the Italian Constitution. It has also further stressed its constitutional value, specifying that the protection of individual conscience arises from the safeguard of fundamental liberties and inviolable rights, recognized and guaranteed to the subject as an individual under Article 2 of the Constitution, since full and effective guarantee of these rights cannot be provided without a corresponding constitutional protection[50].

The protection of our inner sphere, cognitive freedom, and mental privacy, therefore, represent an essential aspect of human dignity, consistent with the Kantian teaching that upholds moral freedom. In this regard, as observed by scholars «the duty of dignity protection entails a positive action from the state and requires variable degrees of public engagement and support… this duty has to be firmly distinguished from an overly controlling (which could range from paternalistic to authoritarian) approach to protection whereby public authority may enforce dignity… against the will of the human beings concerned. This would go against the constitutional definition of humanity… human autonomy and freedom to self-determination»[51].

In even more explicit terms, the concerns expressed by the current Italian Privacy Supervisor, Pasquale Stanzione, can be highlighted. While configuring cognitive freedom as a foundational prerequisite for the right to individual self-determination, he has raised alarm (especially in light of recent developments in neuroscience) about the emergence of a new anthropology, demanding a deeper and more effective protection of dignity against the risk of (not merely biological but)

---

threshold of minimal conditions of rationality, autonomy and the principle of proportionality secure the liberty to pursue decisions that are not fully rational and that can even be irrational or unreasonable».

[48] As recalled by P. SOMMAGGIO, M. MAZZOCCA, A. GEROLA, F. FERRO, *Cognitive liberty. A first step towards a human neuro-rights declaration*, in *BioLaw Journal*, n. 3/2017, p. 28.

[49] For an overview of the doctrine on the subject, cfr. A. BONOMI, *Libertà morale e accertamenti neuroscientifici: profili costituzionali*, in *BioLaw Journal***,** n. 3/2017, pp. 146-147.

[50] Par. 4, adjudication No. 467/1991.

[51] C. DUPRÉ, *Human Dignity in Europe: A Foundational Constitutional Principle*, in *European Public Law*, n. 2/2013, p. 338.

neurological reductionism, capable of nullifying long-standing and consolidated freedoms. In this respect, no exercise of rights or freedoms could ever be considered genuine if realized as a result of conditioning, even if only indirect or partial[52].

Cognitive freedom and its related self-determination must, therefore, be safeguarded from the dangers of compromising the psychological integrity of the individual, such as those represented by actions that directly affect cerebral and mental structures or that are conducted with subliminal and/or hidden means capable of exerting a suggestive force that conditions the will, the capacity for inner analysis, and the ability to receive and assess external stimuli critically, without the possibility to react autonomously to them[53]. These aspects, as emphasized by scholars, may already find protection in existing European regulations, from the ECHR (Article 8) to the European Charter of Fundamental Rights (Articles 1, 3, 7, and 8), as rights to psychological integrity, self-determination, and privacy (including mental privacy) [54].

This is the "scope" of the constitutional protection of the foundations of a genuinely "autonomous self-determination" to be safeguarded against a public authority that exploits cognitive biases or otherwise acts upon spontaneous mental processes through nudge regulation strategies. In contrast, it could be argued that nudge, based on evidence from cognitive sciences, aims at empowering the individual and improving the scope of cognitive processes. However, even by making such a claim, there is a risk of entering into a slippery ground from a legal-constitutional perspective.

On one hand, the legal necessity of empowerment itself is debatable, as some in doctrine advocate for a "right not to know": « i.e., not being obliged to take notice of or being confronted with particular information, particularly information about yourself, could contribute to people's well-being. There is a plethora of literature on the right not to know, but mostly in a medical context, not in a broader perspective. It is sometimes argued that withholding information from people is paternalistic and interferes with people's autonomy, but at the same time it can also have a positive effect on autonomy, for instance with regard to a right to make mistakes and the right to change your mind»[55].

On the other hand, the ground becomes even more slippery if, as emphasized by the Constitutional Court, action on cognitive processes does not allow for a clear distinction between persuasion and suggestion. As a result, the nudge technique, although intended to position itself within the shadow of persuasion, risks to encroach into suggestion, even when informative strategies aimed at empowerment are involved. The Italian Constitutional Court warned against this risk in its adjudication No. 96 of 1981. In declaring the unconstitutionality of the crime of plagiarism, the Court observed that it is extremely difficult, if not impossible, to practically identify and distinguish for legal consequences the psychological activity of persuasion from the psychological activity of suggestion. There are no certain criteria to separate and qualify one activity from the other and to ascertain the exact boundary between them. Affirming that in persuasion, the passive subject retains the faculty to choose based on the arguments presented to them and is therefore capable of refusal and critique, whereas in suggestion, conviction occurs directly and irresistibly, taking advantage of the other's inability to criticize and choose, necessarily implies an assessment not only of the intensity

---

[52] P. STANZIONE, *Relazione introduttiva,* in *Privacy e neurodiritti – La persona al tempo delle neuroscienze*, cit., p. 15.

[53] As stated by F.G. PIZZETTI, *Neuroscienze forensi e diritti fondamentali: spunti costituzionali,* Turin, 2015, p. 89, in reference to the crime evidence assessment.

[54] O. POLLICINO, *Costituzionalismo, privacy e neurodiritti,* in *Privacy e neurodiritti – La persona al tempo delle neuroscienze*, cit., pp. 69 ss.

[55] B.H.M. CUSTERS, *New digital rights: Imagining additional fundamental rights for the digital era*, in *Computer Law And Security Review*, vol. 44, 2014, p. 8.

of the psychic activity of the active subject but also of its quality and results. Regarding intensity, from psychiatric, psychological, and psychoanalytic texts and extensive medical descriptions of psychological conditioning, it is evident that every individual is more or less suggestible, but it is not possible to concretely grade and ascertain to what extent the psychic activity of the subject expressing ideas and concepts can prevent others from freely exercising their will. As for quality, it is not established to what extent the activity of the active subject does not concern directives and suggestions that the passive subject is already willing to accept[56].

Bearing in mind the extent of the freedoms at stake and the uncertainties surrounding the levels of influence on their autonomous expression, a cautious exercise of public power (see §§ 5 and 6) should result in the implementation of regulatory techniques that leverage evidence given by cognitive sciences, due to their ability to further fostering the asymmetry of power with citizens and the sensitivity of their target, i.e. the most intimate, hidden, and protected sphere of the individual from external interference.

Translating all this into legal terms, we can recall the construction put forward by Ferrajoli. The author places the "freedoms from", at the highest level of the legal forms of self-determination. They consist of fundamental immunities that translate into purely negative expectations and are not limitable as they do not interfere with other subjective situations. Within the legal freedom of self-determination, understood as a faculty, he isolates and distinguishes the capacity for self-determination, that is, moral freedom. One may possess the former (legal freedom of self-determination) and still lack the latter (moral freedom) due to various conditioning factors[57]. If this seems to hold true, we can conclude by stating that, following Ferrajoli's pattern of freedoms, in the case of nudge regulation, the legal freedom of choice remains intact as the subject does not experience coercion, but the moral freedom (and with it the capacity for self-determination) is affected by the nudge strategy. This entails that autonomy is something different and something more than freedom to choice: «while freedom concerns the ability to act, autonomy concerns the independence and authenticity of the desires that move one to act in the first place»[58].
It is, therefore, not a coincidence that in the face of nudge techniques, scholars have spoken of «freedom without autonomy»[59] or of prejudice to freedom understood as autonomy[60], specifying that «invisible nudges stifle autonomy and agency; they thus provoke what they are meant to remedy»[61]. Indeed, the concept of nudge inherently contains this underlying ambiguity, an unresolved dilemma, whether the conditioning effect it produces, concealed in the formulation of the provision and not accompanied by the stamp of obligation, increases or instead reduces the sphere of freedom and decisional autonomy of the subject[62].

In conclusion, while nudging is considered "libertarian" as it does not impose a choice, it can still act in a direction not devoid of risks from the perspective of individual moral freedom and self-determination, as it aims to influence the course of their mental processes. It operates, therefore, throughout "subtle" methods, leveraging cognitive processes and their own pathways, correcting supposed biases or, conversely, exploiting their existence.

---

[56] Par. 13, adjudication No. 96/1981.

[57] L. FERRAJOLI, *La costruzione della democrazia – Teoria del garantismo costituzionale*, cit., p. 142.

[58] M. SCHWEIZER, *Nudging and the principle of proportionality. Obliged to nudge?,* cit., p. 99.

[59] A. ZITO, *La nudge regulation nella teoria giuridica dell'agire amministrativo,* cit., p. 46.

[60] L. BOVENS, *Real Nudge,* in *European Journal of Risk Regulation,* n. 3/2012, p. 43.

[61] A. VAN AAKEN, *Judge the Nudge In Search of the Legal Limits of Paternalistic Nudging in the EU,* cit., p. 94, observes that invisible nudge «impacts the rule of law to a considerable degree since law, and the measures based thereon, must be public and accessible to those targeted or affected».

[62] D. RUSSO, *L'approccio "nudge" nel diritto internazionale: una nuova frontiera del* soft law, in *osservatoriosullefonti.it,* n. 2/2022, p. 135.

If these are the constitutional concerns that afflict nudging, they are equally applicable to regulatory management. Unlike the former, the latter operates "in the light of day" directly constraining the material scope of human action, precisely defining its operating space: «it is more than command; it is more than coercive threats; it is complete control, operating *ex ante* rather than *ex post*, and closing the gap between prescription and practical possibility»[63]. It operates directly on the possibilities that remain open to the subject in the physical world and, in doing so, it affects - in terms of moral freedom - his possibility of choice, completely nullifying it. In this perspective, the individual's willingness is entirely replaced by that of the public regulator.

In brief, if nudging "circumvents" cognitive freedom, regulatory management "completely eliminates" it.

Finally, it should be noted that besides conflicting with cognitive freedom, nudging can also infringe upon the principle of equality for two main reasons. On the one hand, since it is addressed to implement the well-being of «a limited group (i.e. those affected by bias), and not everyone»[64]; on the other hand, discriminatory potential increases when nudging strategies utilize profiling: which is made possible by Big Data Analytics, thus identifying groups of individuals to "nudge" in a certain direction rather than another[65].

5. Aspects of constitutional relevance: the relationship between powers

Nudging and technological management, as mentioned earlier, affect aspects of general theory and philosophy of law related to the formulation of legal norms. In this respect, the typical characteristics of legal provisions as hypothetical imperatives, qualified by a negative or positive sanctions, are dismissed. Furthermore, technological management incorporates within the provision, translated into computer language, a part that traditionally lies outside to it, namely its execution and the consequent effectiveness. But beyond these aspects, which, as mentioned, pertain more to general theory and philosophy of law, what seems most relevant to constitutional matters, in addition to what has already been addressed regarding cognitive and moral freedom, is the involvement of sources of law and, in particular, the principle of legal reserve[66].

Now, regardless of the opinion one may embrace in respect of the (variously gradable) impact of these regulatory techniques on the freedom of self-determination and human dignity, the fact remains that they represent a mode of exercising public power that not only interferes with fundamental freedoms but does so on enhanced foundations, namely, scientifically informed (evidence-based, for nudging) and structured (computer code, for technological management) basis[67].

---

[63] R. BROWNSWORD, *Law, Technology and Society – Re-imagining the Regulatory Environment,* cit., p. 178.

[64] F. DI PORTO, N. RANGONE, *Behavioural Sciences in Practice: Lessons for EU Rulemakers,* cit., p. 50.

[65] As underlined by R. KITCHIN, *The Data Revolution – A Critical Analysis of Big Data, Open Data & Data Infrastructures*, cit., p. 214, «big data and associated analytics are radically transforming how people are treated collectively. Pattern recognition is enabling a multitude of groups to be identified within datasets that share characteristics».

[66] A. ALEMANNO, A. SPINA, *Nudging Legally: On the checks and balances of behavioural regulation,* cit., p. 449.

[67] A. ALEMANNO, A. SPINA, *Nudging Legally: On the checks and balances of behavioural regulation,* cit., p. 445, highlight that «the emergence and diffusion of behaviorally informed regulation raises a fundamental question related to the forms of governmental power. This is because this form of intervention based on public influence and persuasion inherently touches upon the equilibrium of power and liberty in our modern societies. This is by no means to allege that influence and persuasion have not been previously considered to be a form of power, but rather that a better understanding of the patterns of human decision making sheds light on precise and concrete mechanisms to modify and control human behavior». In relation to *technological management*, R. BROWNSWORD, *Law, Technology and Society – Re-imagining the*

This entails the need to recover certain guarantees and safeguards in the relationship between powers, aiming to avoid these techniques falling under the complete discretion of governments, its peripheral and territorial administrative branches. In this regard, it is first necessary to recover the original rationale of the principle of legal reserve[68], and give back the principle of legality to its essential role in the relationship between the legislative and executive powers[69], as well as rebuilding the foundation of legal certainty that, in delimiting the scope of public power, safeguards fundamental subjective legal positions.

As a consequence, what the Parliament could and should do is adopt a law that establishes "criteria" for the governance and management of these regulatory practices[70]. It should enshrine in legislative form the balance between, on one hand, the public interest objectives that can be pursued and the means that can be deployed by these regulatory techniques, and, on the other hand, the impacted freedoms (discussed in the previous paragraph). To this end, it could first delimit the use of such regulatory practices in a negative way, excluding them where they unacceptably limit or distort cognitive freedom or significantly suppress the feasible options for the individual, or the public interest is not deemed to adequately justify any incidence on cognitive or practical liberties. In these terms, it could follow what the European Union is doing in regulating complex systems such as artificial intelligence: the relevant proposal for regulation starts with a similar negative approach, defining first the AI systems that are prohibited as they pose unacceptable risks to fundamental freedoms and rights or the Rule of Law[71].

Secondly, this *actio finium regundorum* of the room left open to the government should then be further delimited with procedural rules aimed at defining the modalities that public administrations must follow in order to make the potential use of these technological regulation transparent, adequately informed, and participatory. Scholars who have addressed the topic of nudge regulation and technological management are mostly aligned in recognizing the need to ensure transparency and prevent abuses or arbitrary uses, thus fully respecting the Rule of Law[72].The goal is to avoid such regulatory practices being left to the discretion of the executive and, consequently, to ensure that the law passed by Parliament, although not required to delve into the details of individual application cases, at least sets the "framework" of guarantees within which the executive power is authorized to operate.

Thus if for nudging «it appears unlikely that the modalities of governmental action that rely on informal mechanisms of behavior change can be specified in law in detail in any meaningful sense [i.e.] the process by which behaviorally informed strategies are generated cannot be predefined or

---

Regulatory Environment, cit., p. 172, underlines that «technological management does not impinge on the paper dimension of liberty; it does not speak the language of permissions, prohibitions or penalties; rather, it speaks the language of what is practicable or possible and, thus, its impingement is on the real dimension of liberty».

[68] V. CRISAFULLI, *Lezioni di diritto costituzionale – L'ordinamento costituzionale italiano (Fonti normative),* II, Cedam, Padua, 1993, p. 63 reminds that the "principle of legal reserve" whether absolute or relative, aims to fulfill, in its original meaning, a function of safeguarding individual rights and the organizational system of powers. L. CARLASSARE, *La Costituzione, la libertà , la vita*, in *Costituzionalismo.it*, 27 March 2009, speaks about a democratic and protective rationale underpinned by the principle of legal reserve.

[69] As for a distinction between the principle of legal reserve and the legal certainty principle within systems featured by a rigid constitution, and for the organisational scope of the latter, see V. CRISAFULLI, *Lezioni di diritto costituzionale – L'ordinamento costituzionale italiano (Fonti normative),* cit., p. 64.

[70] A. ZITO, *La nudge regulation nella teoria giuridica dell'agire amministrativo – Presupposti e limiti del suo utilizzo da parte delle pubbliche amministrazioni*, cit., pp. 97 ss, assumes that nudging can be deployed by public administrations due to its nature of implicit public power within conferred competences.

[71] Cfr. par. No. 27 of the Artifical Intelligence Proposal (COM(2021) 206final).

[72] R. BROWNSWORD, *Law, Technology and Society – Re-imagining the Regulatory Environment*, cit., p. 133; A.L. SIBONY, A. ALEMANNO, *Epilogue: The Legitimacy and Praticability of EU Behavioural Policy-Making*, cit., pp. 333-335.

circumscribed»[73], otherwise the technique loses in flexibility and resilience, it is nonetheless true that a law of principles does not compromise such characteristics while still providing a minimum of constitutional guarantees.

In these terms, rather than minimizing the effects of nudging under the label of "libertarian paternalism" non-imperativeness, and freedom of choice, the aim is instead to subject them to rules: «nudging should not be accepted as an innocous exception to constitutionally based decision-making, even if most applications appear to benefit people»[74]. Similarly, for technological management, while it is true that it causes a disruption of the legal provision in its prescriptive function, it does not prevent the possibility of introducing a law aimed at framing "the boundaries" within which such regulatory technique can "conglomerate" the prescription and execution of the legal norm, to avoid, once again, arbitrariness and abuses of power[75].

6. Beyond transparency

Making the use of regulatory techniques like nudging and technological management transparent is undoubtedly an essential step that procedural legislative norms, as discussed in the previous paragraph, must not fail to establish in order to give them legitimacy[76]. This certainly entails excluding subliminal practices from the outset, which aim to act without the individual's knowledge and awareness[77].

But transparency not only involves making public - and thus informing the regulatees - that these regulatory practices are being implemented in specific cases, it must also "unveil" the path that the public regulator has followed when deciding to implement them. In this regard, transparency not only involves the notice of the concrete application of the technique in a specific case but even before that, it requires providing evidence of the scientific findings on which the decision to adopt such a practice is based. Regarding this, it is a matter of making the scientific investigation controllable (measurable) through the recurrence of normative constraints that set out the forms and ways for involving expertise[78], and its possible integration into the impact assessment[79].

The path towards transparency (regarding the technique used, the scientific evidence supporting it, and the involvement of expertise in the investigation) should also include compliance with rules governing the privacy and data protection of the individuals involved. This includes informing the individuals about any personal data processed during the conduct of the "experiments" supporting

---

[73] A. ALEMANNO, A. SPINA, *Nudging Legally: On the checks and balances of behavioural regulation,* cit., p. 450.

[74] B.S. FREY, J. GALLUS, *Beneficial and Exploitative Nudges,* in K. MATHIS, A. TOR (eds,), *Nudging: Possibilities, Limitations and Applications in European Law and Economics*, cit., p. 18.

[75] R. BROWNSWORD, *Law, Technology and Society – Re-imagining the Regulatory Environment,* cit., p. 133, observes that «in the Twenty-First Century, the challenge for secondary rules is not so much to empower those officials who legislate, enforce and apply primary rules but to authorise the use of technological management… it is in these limits that we find the new focus for the Rule of Law and the fulcrum for legal orders that employ technological management».

[76] F. DI PORTO, N. RANGONE, *Behavioural Sciences in Practice: Lessons for EU Rulemakers,* cit., p. 49.

[77] L. BOVENS, *The Etichs of Nudge,* in T. GRÜNE-YANOFF, T., S.O. HANSSON, (eds.), *Preference Change. Theory and Decision Library,* vol. 42. Springer, 2009, pp. 207 ss., makes a distinction between *type interference transparency* and *token interference transparency*: «It is one thing for the government to say that they will be using certain types of psychological mechanisms to solve social problems. This is type interference transparency—the government is transparent about how it will try to interfere with our agency… Being exposed to a particular image at a particular time is a token interference by means of a subliminal image. When we are affected by such a token interference, there is no way that we could notice (blocking the use of special equipment)…the problem is that these techniques do work best in the dark. So the more actual token interference transparency we demand, the less effective these techniques are».

[78] A. IANNUZZI, *Il Diritto capovolto – Regolazione a contenuto tecnico-scientifico e costituzione,* cit., p. 149.

[79] As observed by F. DI PORTO, N. RANGONE, *Behavioural Sciences in Practice: Lessons for EU Rulemakers,* cit., p. 33, «targeting RIA precisely to evaluate in advance the potential impacts of rules, knowledge about cognitive and decisional processes of regulatees should improve rulemakers' knowledge».

such regulatory techniques or processed by the tools of technological management when limiting the options available to individuals. Moreover, this information right also ecompasses the underlying logic of any potential use of automated data processing algorithms (Articles 13, 14, 15, 22 of EU Regulation No. 679/2016).

Lastly, transparency is a demanding term, often functional to opening the procedure to participation[80]. In this regard, it is necessary to initiate an inclusive debate[81] during the investigation by the policy-maker to assess the level of "social acceptability" of such regulatory practices[82].

In any case, and ultimately, transparency is not a solution in itself; it is an essential piece of the puzzle but not sufficient to provide adequate guarantees regarding regulatory techniques that may infringe upon cognitive freedom and autonomy. Therefore, with a full understanding of the constitutional implications of the matter, it is essential to shape the exercise of public power with appropriate safeguards, giving back full dignity to the principle of legal reserve and the principle of legality, as discussed in the previous paragraph.

It is at this point that a virtual loop seems to close: starting from the subjective right to cognitive freedom or mental privacy, passing through transparency as a necessary but not sufficient mode of action of public power, and ending with a re-balance – through the principle of legality and the principle of legal reserve – between the legislative and executive power. In a few words, nudge regulation and technological management are more than mere regulatory techniques, since they encompass the ability to shape a certain kind of relationship between public authorities and citizens and, in turn, a certain type of organisation within public power bodies. This is the reason why the mentioned constitutional guarantees need to be established.

---

[80] G. DAL FABBRO, *Freedom to nudge: on the impact of nudging on fundamental rights and liberties and the possible means of scrutiny*, Trento *BioLaw Selected Students Paper* n. 24-2018/2019, p. 7, observes that «the form of a right to participation to the public affairs and to be informed about regulatory measures influencing our personal lives, is actually one of the most endangered aspects of the rising relevance of nudges in policy-making. If we don't know that our behaviour is being directed and we are not given the information about what is going on in the public scenario, our rights are compromised, and the duty to make us aware of all this is a constitutionally recognized one which falls on the shoulders of governments. In the end, therefore, the major problem emerging from this analysis is the one of the actual compatibility between nudges and the freedom of expression, intended as a form of duty of transparency which is imposed on public authorities».

[81] A. ZITO, *La nudge regulation nella teoria giuridica dell'agire amministrativo – Presupposti e limiti del suo utilizzo da parte delle pubbliche amministrazioni,* cit., p. 119, observes that the decision of the public administration to resort to nudge is an expression of political-administrative power, as it concerns the strategic choice of how the public administration intends to interact with citizens, thus participation, given the strategic importance of the act through which the public administration decides to use nudge regulation, should not only be guaranteed but should be as inclusive as possible, recognizing the right of all those who wish to intervene and interact with the public administration to participate.

[82] R. BROWNSWORD, *Law, Technology and Society – Re-imagining the Regulatory Environment,* cit., p. 177, underlines that «technological management might be permitted but, before it is used, there needs to be an inclusive debate about the acceptability of the risk management package that is to be adopted». In reference to *nudge regulation*, A.L. SIBONY, A. ALEMANNO, *Epilogue: The Legitimacy and Praticability of EU Behavioural Policy-Making,* cit., p. 334, state that «it would be worth asking people… if they would in principle, or in specific instances, consent to laws and regulation that take their fallibility into consideration… [in order] to empower citizens to have a say through the public consultation process accompanying IAs».