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The Legal Dilemmas and Solutions of Automated Administrative Penalties

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Abstract

In the digital era, automated administration—an emerging administrative phenomenon—is profoundly reshaping public governance models. However, automated administrative penalties have also raised a series of legal challenges for digital governance. This article first clarifies the fundamental concepts and typology of automated administration and automated administrative penalties, then analyzes their underlying dilemmas from three perspectives: legitimacy, procedural fairness, and rights remedies. First, algorithmic discretion leads to the erosion of legislative authorization and the subsumption of individual justice. Second, impersonal operation renders traditional procedural safeguards like notification and defense ineffective. Third, algorithmic black boxes and review barriers exacerbate the difficulty of seeking remedies. To resolve these dilemmas, this paper constructs a systematic pathway: reconstructing digital due process through dynamic notification, in-process objections, and substantive human review; enhancing algorithmic accountability and reforming judicial review standards to improve rights protection; and finally, clarifying legal liability by upholding administrative principal responsibility and establishing clear traceability chains. These measures collectively advance automated administrative penalties toward stable and sustainable development within the rule of law.

Keywords: automated administrative penalties, due process principle, algorithmic black box, in-process objection, online hearings

1. Introduction to the Issue

As digital government continues to develop, advanced technologies such as artificial intelligence, big data and the Internet of Things are gradually becoming deeply rooted in administrative practices in terms of both scope and intensity. Administrative penalties, as archetypes of burdensome administrative actions, have transformed from merely serving supporting roles to successfully completing “end-to-end” automated decisions—carrying out fact-finding, determining key elements and even issuing final rulings on their own. However, can efficiency be attained at the cost of fundamental rule-of-law values? While fully automated administrative penalties address the deficiencies of traditional administrative enforcement models, they simultaneously present a dilemma to the traditional administrative law system established based on human rationality and agency. Despite the fact that the current Administrative Penalty Law added Article 41 to the law through its 2021 revision and thus made a principled response to the use of electronic monitoring devices for collecting and documenting illegal facts, and tentatively set forth “legal review” and “human verification” as necessary corrective measures, this article is nothing more than a declaratory statement of principle. Its normative scope is not yet sufficiently comprehensive and is hard to effectively address the complex legal issues that arise along the entire process of automated administrative penalties.

Currently, automated administrative penalties harbor multiple potential legal risks (Zhang Linghan, 2020)[1]. First, in terms of legitimacy, the essence of administrative discretion is to interpret legal requirements and exercise

discretion on factual circumstances—an obviously value-subjective and context-specific exercise. When the essence of administrative discretion is embedded in algorithmic models, does the "existed algorithmic discretion" constitute an overreach of legislative authorization? Will the black box of algorithms, biases in training data, and inherent model limitations result in unforeseeable, unfair, and even systemic biases in penalty outcomes? This will undoubtedly raise significant questions regarding the principle of law-based administration and breach the substantive justice requirement of "treating alike alike and differently different." Second, at the level of procedural legitimacy, traditional administrative penalty procedures feature stages such as notification, statement of defense, and hearings. These seek to protect the procedural participation and defense rights of the party concerned through "face-to-face" communication and adversarial interaction. (Wei Qiong, Xu Junhui, 2020)[2]. The lack of individuation and immediacy of automated administrative penalties makes these procedural protections more formality than substance. For example, can a penalty notice produced by a computer be considered proper "notification"? If faced with a decision triggered by a machine, to whom does the party submit its statements and defenses and what effect would this has? When administrative decisions are made initially by machines, how can we characterize the nature, standards, and efficacy of subsequent "human review"? These questions make the application of due process principles (part of Anglo-American natural justice) in the digital era a formidable challenge. Second, in respect to rights protection and remedies, automated administrative penalties further entrench the informational status quo and increase the power imbalance between the administrative side and affected parties. The affected party has no knowledge of the algorithmic thinking, data sources, or weighting formulas of the penalty, and it is hard for them to sufficiently perform their rights to know and to object. As for alternative remedies, in administrative reconsideration and administrative litigation, the subject of review is unclear. Should it be reviewed based on the final penalty, or traced back to the underlying administrative algorithm? Do courts and reconsideration bodies have the professional capability to review algorithms? If the algorithm is improper, who should bear the legal responsibility among developers, users, and operators? This undermines effective redress of citizens' rights and the principle of judicial finality. Given this, this paper will explore a systematic solution integrating coherent rule construction, procedural redesign, rights protection, and liability clarification (Ma Yanxin, 2019)[3]. Intend to offer interpretive and constructive theoretical support and intellectual guidance to restrain and direct the healthy development of automated administrative penalties and promote the information age's governance through administrative rule of law.

2. Basic Concepts and Classification of Automated Administrative Penalties

In order to discuss the legal issues of automated administrative penalties, it is necessary to first clarify and define the overarching concept of automated administration, its connotation and extension. Clear conceptions are the foundation of theoretical discussions and normative constructions; they can eliminate unnecessary debates caused by terminological quagmires and keep our research focused.

2.1 Concept and Scope of Automated Administration

Firstly, the concept of automated administration. Automated administration is not a legal concept with a unique and definite connotation, but a general expression of a kind of administrative activities using information technology to replace human operations with different proportions. Scholars defined automated administration from different angles, such as "tool theory" and "subject theory". In order to avoid a too wide or narrow interpretation, this paper tries to define it at both the functional and procedural levels. Automated administration is an operational mode that administrative entities use information management system, preset algorithmic program or intelligent technological devices to undertake partially or wholly administrative activities from collecting information, processing data to preliminary operation and final determination (Qin Meiyu, 2021)[4]. Its simple connotation is different levels of "exclusion" or "delay" of direct human intervention in administrative procedures. A preliminary clarification is necessary for the relationship and distinction of "automation" and "intelligence". "Automation" generally speaking, in the current context, refers to the execution process which is repeatable and premised on rules and logic, exhibiting deterministic and predictable behavior patterns. While "intelligence" encompasses technologies such as machine learning and deep learning conferring systems autonomous learning and adaptation functions, even exhibiting decision-making processes with uncertain and black-box features. From a perspective of legal regulation, automated administration is the basic form of intelligent administration, and the latter is an advanced form with more challenging issues of accountability and transparency. This paper discusses automated administrative penalties based on rule-based automation practice, but the analytical framework of this paper also has a reference value for preliminary intelligent decision-making.

Second, the range of subjects and objects in automated administration Defining the range of subjects and objects is necessary for demarcating its range and legal relationship. As for the range of subjects, the implementing entity is, and can only be, an administrative body. Technology plays the role of a "tool" or "agent", and does not change the basic attribution of administrative power. While the private entity is only involved through administrative delegation or government procurement relationships, the consequence of its behavior shall be

borne by the administrative body being delegated to. Only by making this demarcation can we maintain the principle of a responsible government and avoid appearing in a "vacuum of responsibility" due to the participation of technology.

Secondly, as for the subject matter, the range of automated administration is not universal. Its applicability depends largely on the standardization, structuring, and codifiability of administrative behavior. Generally speaking, binding administrative matters with clear facts, explicit evidence, and determinate legal norms are more suitable for automation. While administrative fields more dependent on human value judgments, discretionary power, balancing of interests, or situational awareness are not suitable to fully entrust automated systems. Automated administrative penalties are located in the middle level of the range of matters, namely the factual determination stage is more suitable for automation, while the exercise of penalty discretion approaches the boundary of legality (Zha Yunfei, 2021)[5].

2.2 Concept and Classification of Automated Administrative Penalties

First, clarify the concept of automated administrative penalty. Based on the definition of administrative penalty in Article 2 of Administrative Penalties Law, this paper believes that automated administrative penalty shall be defined as: the legal acts implemented by the administrative entity through non-human automated system to legally diminish rights or add obligations on citizens, legal persons or other organizations which violate administrative management order. Its connotation includes the following four elements: (a) the purpose element: implementing the penalty of illegal acts and upholding administrative management order, the same with traditional administrative penalties; (b) the subject element: the liability is still set by the administrative organ and the automated system is just the executing tool; (c) the subject element: the whole process of core behaviors (discovery of fact, assessment of requirement, generation of decision and delivery) is finished by the automated system, which is the key point that it is different with "information-based office work" (e.g., typing on computer), "electronic notification" (e.g., SMS reminder), etc.; (d) the effect element: it will cause the direct legal consequences and greatly affects the legal position of the liable party (Guan Baoying & Wang Junliang, 2021)[6].

Second, classification of automated administrative penalties. Categorical analysis helps us understand the legal nature of automated administrative penalties more clearly and lays the foundation for subsequent more "differential" regulations. We can make the following classifications based on the following criteria, for example.

First, according to the depth and stages at which automation participates in making administrative penalties, they can be divided into "fully automated administrative penalties" and "semi-automated administrative penalties." Fully automated administrative penalties means that the whole process, from discovering the violation to securing evidence, from making penalty decisions to delivering them, are all completed by the automated system, and no substantive actions are taken by administrative personnel before or during the process. For example, in some places, the "electronic monitoring system for illegal parking" directly captures images of parked violations, discovers the license plate of the vehicle, cross-references the vehicle's information, makes penalty notices based on pre-set fines, and then immediately sends notifications to the owners of the affected vehicles through the Traffic Management 12123 app. Semi-automated administrative penalties refer to a situation in which automated systems complete basic tasks like fact discovery and evidence collection and fixation, but the final decision to impose a penalty and deliver the decision still requires administrative personnel to review and issue it. This is the more prevalent model that we use today and also conforms to the implication of Article 41 of the Administrative Penalty Law (Zhou Wenqing, 2022)[7]. For example, after a traffic technology monitoring device records a speeding violation, traffic police personnel analyze the traffic video recording to determine whether it is complete and clear, and whether any exculpatory circumstances such as emergency avoidance apply, before making the decision to impose a fine. Second, according to the functional positioning of the application technology, automated penalties can be categorized as "identification-based," "decision-based," or "execution-based." Identification-based technology mainly applies automation to the identification and recording of violations, such as high-definition cameras capturing vehicles involved in traffic violations, web crawlers catching false advertisements, or sensors registering environmental pollution beyond prescribed limits. As mentioned above, identification means the application technology mainly applies automation to the identification and recording of violations; decision-making means that, based on identification, automation further determines whether the behavior meets legal requirements and issues a preliminary or final penalty decision; for example, after identifying a vehicle running a red light, the system automatically matches the behavior with corresponding penalties provided in the Road Traffic Safety Law and issues a notice specifying the amount of the fine and number of demerit points. Enforcement means handling the compulsory execution of penalty decisions, such as automatically deducting overdue fines from linked bank accounts, possibly including automatically calculated surcharges on the fines. It should be noted that in practice, these three types often merge

together to constitute a complete automated penalty chain.

3. Problem Analysis: Multidimensional Legal Dilemmas in Automated Administrative Penalties

The widespread application of automated administrative penalties, while enhancing administrative efficiency, also reflects a profound disconnect between traditional administrative law principles and digital administrative practices. This raises not merely superficial legal application issues, but a series of multidimensional legal dilemmas concerning the very foundations of administrative law.

3.1 Legitimacy Dilemma: The Alienation from Administrative Discretion to Algorithmic Discretion

The principle of law-based administration stands as the cornerstone of administrative law, centered on the tenet that "no administration exists without law." The primary dilemma of automated administrative penalties lies in their undermining of this foundational principle. The transformation of administrative discretion into algorithmic discretion has resulted in a fundamental alienation, precipitating a severe crisis of legitimacy.

First, legislative authorization defects and "algorithmic blank checks." Traditional administrative penalties strictly adhere to the principles of legal reservation and legal supremacy, requiring that the types, severity, and conditions for penalties be explicitly stipulated by laws and regulations. However, current legislation authorizing automated administrative penalties is often general and open-ended. For instance, the Road Traffic Safety Law authorizes traffic management departments of public security organs to oversee road traffic safety (Li Qing, 2022)[8], but not explicitly authorize them to use fully automated algorithmic models to operationalise uncertain legal concepts such as "minor" or "serious" offenses, nor to assign discretionary weights. Such a "blanket authorization" would enable the algorithm to take on rule-making functions that should be performed by the legislature. When translating legal language into computer code, algorithm designers inevitably make extensive interpretation, selection, and value judgments. For example: how to translate the discretionary factor "minor circumstances" into specific ranges of numbers? How to set weighting ratios between different scenarios of violation? These judgments are moved "from transparent legislative bodies to opaque technical development phases" and amount to a substantive circumvention of the principle of legislative reservation (Wei Qiong, Xu Junhui, 2020)[9].

Second, the rigidification of discretion and the hollowing out of case-by-case justice. An important function of administrative discretion is to realize justice in this case. It compels police to take the context of the violation into account, including social harmfulness, subjective state, and the subject's attitude towards the violation, to make reasonable decisions. But what discretion of an algorithm will rely on is the "past." It makes decisions based on past data and rules pre-set by human beings, pursuing formal uniformity and standardization. Its logic is inevitably rigid discretion. It cannot embrace new circumstances that legislators did not anticipate, nor can it accommodate exceptional circumstances such as "running a red light to save a dying patient." When the constantly changing realities of life are forced into an algorithm's binary choices, discretion is sedated from being an "art" pursuing substantive rationality into being a "technique" pursuing formal consistency (Guo Qi, 2021)[10]. The inevitable outcome is the erosion of justice in individual cases.

Third, algorithmic black boxes also harm the principle of administrative transparency. Administrative legality requires that the spheres of administrative power be transparent and open. However, simple rule-based automated systems and more sophisticated machine-learning models are "black boxes" to different degrees. From the perspective of the damaged party and the review body later in the process, this means that the reasoning process behind a penalty decision — how the system correlated input factual data (20% speeding) with output legal findings (200 yuan fine, 6 demerit points) — is dark, inexplicable, and unchallengeable. On one hand, this means that the public's ability to supervise administrative power is harmed in violation of the spirit of "sunshine government." On the other hand, this means that the penalty decision is not supported by adequate reasoning. A decision that shows only its conclusions but not their justifications—despite being factually "right"—procedurally manifests a lack of respect for the rights of the damaged party and therefore is weak in its ability to win acceptance.

3.2 The Dilemma of Procedural Justice: The Ineffectiveness and Challenges of Traditional Administrative Procedures

Due process is a classic procedural design to limit administrative power and protect citizens' rights, whose typical components should include notification, hearing statements and defenses, recusal, and providing reasons, etc. Due to the impersonal, instantaneous, and linear features of automated administrative penalties, these classic procedural safeguards have weakened, become hollow, or even dead in most cases.

First, formalized notification. The typical design of traditional notification procedures is to enable the subject to clearly and promptly know the facts, reasons, legal basis of the penalty, and his/her rights and thus prepare for defenses afterwards. But the formalized notification in the context of automated penalties is usually the form of some system-generated and standardized electronic document. First, its content is usually very brief. Apart from

stating some basic facts of the penalty, applicable legal provisions, and the consequences to be borne, it usually does not disclose the legal reasoning of the algorithm, the reasoning logic of the corresponding rules, or the process of forming the evidence, etc. For instance, the license plate Su A2L7X1 automatically fined by the "parking violation ball" system just means "Parked in violation of a no-parking sign at X:XX on Y Road," and it can only inform the subject that your car was judged to be 'stationary' and not 'stop-and-go' parked at the no-parking sign by the system, but it cannot show you the original, edited footage before the algorithmic processing. In this sense, it is merely an outcome notification rather than an effective commencement notice of the procedure, and thus fails to provide any effective guidance to objection (Ma Yanxin, 2019)[11].

Second, the nullification of the right to state facts and make arguments. These are the procedural safeguards that protect individuals challenging the exercise of administrative power. Their nature is face-to-face speaking and confronting. The individual's statement of defense causes the administrative agency to re-examine its preliminary decision, discerning and correcting the error. Whereas, here, when the penalty decisions are made by an automated system, the question becomes, "to whom should the party present statements," and, "to whom should the party present defenses." Defending oneself to a cold algorithmic system is like playing the violin to a cow (Qin Meiyu, 2021)[12]. In practice, post-decision manual review or administrative reconsideration channels often serve as substitutes for this right. Yet this turn[s] the right to defense during the process into a right to remedy after the fact. The gap between right on paper and right in practice is enormous in terms of function and effect. The value of in-process procedures lies in their ability to delay the enforcement of decisions, buying time for error correction. In contrast, post-decision remedies afford redress only after the decision has taken effect and its negative consequences realized (i.e., the money for the fine has been deducted, points from the driver's license have been erased). As a result, the effectiveness of rights protection is greatly reduced.

Third, the quandary in using hearing procedures. For penalties for which law specifies hearings are required, automated penalties pose a dilemma. Holding a hearing before the automated penalty is automated away. This is simply manual penalty. Holding a hearing after the automated penalty is made focuses on an already made decision, and serves more than anything else administrative reconsideration. More seriously, hearings require that the facts, evidence, and legal application be cross-examined by both parties (Hu Minjie, 2021)[13]. Yet when the "evidence" on which penalties are imposed is composed of the logic of the algorithm's reasoning and its data model, the administrative body imposing the penalty may itself be unable to explain the process by which it formed its conclusions. As a result, no cross-examination or debate takes place at a shared level of cognition, and hearings are largely a formality.

Fourth, the position and effectiveness of manual review are unclear. The "manual review" required by Article 41 of the Administrative Penalty Law was designed to be a safety valve that would offset the defects of automation. In practice, however, its role is very unclear. First, is it a formal review or substantive review? If it is merely formal (such as checking completeness of data), it cannot correct errors. If it is substantive, it is questionable whether the person conducting the review has enough time and expertise to review each decision made by the algorithm among the huge volume of automated outputs. Second, what is the relationship between manual review and automation? Does the review replace the original penalty, or does it merely approve of it? The law does not specify this. This uncertainty in position renders "manual review" liable to becoming a token, symbolic link, and rendering it unable to genuinely fulfill its role in upholding procedural legitimacy.

3.3 The Dilemma of Rights Protection and Remedies: Weakening of Interested Parties' Rights and Barriers to Remedies

When automated penalties exhibit defects both in substantive legitimacy and in procedural fairness, an accessible and effective channel for remedying the penalty becomes the last line of defense for rights protection. However, the use of automated technology also creates multiple dead ends for the administrative counterparty seeking remediation.

First, dead ends for exercising the right to know and the right to objection. Effective remediation requires that the right holder can know specifically what circumstances have led to the infringement of his rights and to raise an objection against these circumstances. It is difficult for this prerequisite to be met. In these circumstances, the right to know of the party whose rights have been affected should expand to include the "right to algorithmic transparency"—that is, the right to know the most basic principles, key parameters, and decision-making logic of the algorithmic model used in the penalty. However, on grounds of technical secrets, trade secrets, or so-called "national security," administrative agencies often refuse to disclose the relevant algorithms, and the right to know of the affected party is suspended. Without sufficient information, the objection raised by the affected party can only be vague and unfocused—a general "I disagree"—and it is impossible for the affected party to pinpoint any errors in the factual determination, legal application, or exercise of discretion made by the algorithm. This places the affected party at a fatally disadvantaged position from the outset of remediation.

Second, the dilemma of the subject and standard of review in administrative reconsideration and litigation. In

traditional administrative litigation, courts review the legality of administrative actions, such as whether the evidence is conclusive, laws and regulations are correctly applied, and procedures are lawful. However, in litigation triggered by automated penalties, the subject of review becomes unclear and complicated: Should the court review the legality of the final penalty decision, or should it trace back to the algorithmic system that produced it? Facing the algorithm itself, courts confront insurmountable technical barriers and professional competency challenges (Guo, Yuting, 2023)[14]. Consequently, courts frequently employ a "dodging the substantive issues" strategy in practice, reviewing only formal and outcome-based scrutiny but avoiding any substantive examination of the logic of the algorithm itself. This weak intensity of review hampers the judiciary's ability to effectively curb automated administrative power.

Third, the burden of proof conundrum. In administrative litigation, the burden of proving the legality of the administrative agency's actions lies with the defendant. In automated penalty cases, this burden includes proving the fairness, accuracy, and legality of the algorithm. However, requesting that the administrative agency fully disclose and explain its algorithm is a heavy burden and practically challenging. Conversely, shifting the burden to the plaintiff to prove the algorithm's errors or biases is unreasonable and nearly impossible. This conundrum in burden allocation severely hampers the effectiveness of legal remedies.

Fourth, the chain of state liability accountability is broken. When automated penalties harm parties due to errors in the algorithm, seeking state compensation faces a broken chain of responsibility. Harm may be caused by problems in the design of the algorithm, bias in the training data, technical issues during operation and maintenance, or improper use by the administrative body. Faced with this broken chain spanning multiple stages and participants, identifying the liable party and delineating legal responsibilities between administrative bodies and technology providers is a new challenge. Without clarifying this chain of liability, the principle of illegal liability under the State Compensation Law proves hard to implement, leaving parties exposed to gaps in state compensation for their losses (Ma Yanxin, 2020)[15].

4. Resolving the Issue: Pathways to Alleviate the Dilemma of Automated Administrative Penalties

Encountering the dramatic rule-of-law crisis induced by automated administrative penalties, it is not enough to simply tweak the technology or patch regulations piecemeal. We need to build a set of rules that both enjoy technological efficiency and conform to rule-of-law values. In this section, we seek solutions to the dilemmas of automated administrative penalties in terms of rules, procedures, rights, and responsibilities.

4.1 Rule-Based Governance: A Legitimacy Framework for Automated Administrative Penalties

The legitimacy crisis of automated administrative penalties lies in the fact that algorithmic discretion has undermined traditional legislative authorization models. The solution to this dilemma lies in the source of law-based administration—fine-tuning and organizing rules to set legal "reins" for automated decision-making.

First, make "scenario-based" legislative authorization to clarify the boundaries for automation. When legislating or revising laws in related fields, one should give up the authorization models of broad and open-ended authorization, and adopt more detailed "scenario-based" authorization models. That is, legislators need to clearly answer: In which specific administrative management fields is what level of automated penalties permitted? Especially for fully-automated administrative penalties, a strict attitude of "principle prohibition with statutory exceptions" should be taken. That is, unless being explicitly and specifically authorized by law, fully-automated mode should not be used to make the final penalty decision. The legislative authorization should clarify the types of violations that automated systems are allowed to deal with, evidentiary standards, and the range and limits of discretionary power (GuXue, 2021)[16]. For example, highly automated processing may be permitted for violations featuring straightforward facts, minor circumstances, and limited discretion (such as parking violations). Conversely, for violations featuring intricate factual determinations, substantial interests, and wide-ranging discretionary authority, automation should be limited to playing an auxiliary identifying role while retaining the ultimate deciding discretion of humans.

Secondly, build a tiered "algorithm transparency system" to solve the black-box problem. Given the fact that full and outright algorithm disclosure is both unrealistic and unnecessary, a tiered assurance system on algorithm transparency must be put into practice: First, macro-level transparency open to the public: As administrative agencies use automated systems, they have the obligation to disclose basic information about these systems to the public, including system functions, legal basis, design objectives, core logic (such as standards for making a fact determination of a violation), and summaries of performance evaluations. Second, case-specific transparency open to the party affected: When an administrative agency penalizes someone, the party has a right to know "information of significance", by which s/he can understand why s/he did something that deserved a penalty. This should include, but is not limited to: clear, unaltered original evidence (such as original violation photos), the basis for the algorithm's determination of key facts (such as criteria for judging whether someone has "crossed the line"), and the legal provisions and benchmarks of discretion (Wang Zhengxin, 2022)[17]. It

should be able to submit necessary materials such as the source code of algorithm, training data and decision log to the reviewing authority, and even hire third party technical experts for assessment to guarantee the basic spirit of judicial review.

Third, we should build a review and filing system for "codifying discretionary benchmarks". Encoding discretionary benchmarks into algorithms is the essence of automated penalties. The encoding process is technically restricted under administrative rule of law. It is suggested that an "Algorithmized Discretion Benchmark Filing Review System" should be established. Before the discretion benchmarks (for example, the detailed standard of "serious circumstances" of "Scoring System for Road Traffic Safety Violations") are converted into computer-executable codes, the coding plan and its legal basis, design specification and fairness impact assessment report should be submitted to the judicial administrative department (or the specialized digital regulatory agency) of the same-level people's government for filing review (Lu Chao, 2024)[18]. The review should further ask: whether the code logic sufficiently and appropriately captures the original thinking and legislative spirit of the discretion benchmarks; whether technical constraints improperly narrow down or eliminate the discretion benchmarks; and whether necessary exception handling paths are established. Only reviewed and filed algorithmic discretion benchmarks can be evidences for their legitimacy.

Through this three-tiered rule-building design, we can establish a legitimacy structure for automated administrative fines, preventing technological implementation from deviating from legal constraints and thus bring back "algorithmic governance" as "rule-based governance".

4.2 Procedural Reconstruction: Due Process Principles of the Digital Age

Due process effectiveness in non-automated scenarios is low, and due process of automated scenarios should be functionally reconstructed for the digital age. The value of procedure should not be weakened by technology, but enhanced by it.

First, innovate notification methods to achieve "dynamic and comprehensive notification". Notification procedures should not be limited to "outcome notification", but expanded to "process-oriented and explanatory notification". Technologically, multimedia and hyperlinks should be used to strengthen content and enhance understanding. For example, electronic traffic fines should embed full video footage of the violation, vehicle trajectory maps, and prominently link to relevant legal provisions, interpretations of discretion benchmarks, and accessible explanation of algorithmic recognition principles. More crucially, notifications should explicitly guide recipients to specific channels, time frames and methods to exercise objection rights. This turns the rule of "silence as consent" into an interactive process that requires recipient's active exercise of right of defense from the very beginning of the procedure.

Second, embed an "in-process objection" trigger to break linear workflows. To solve the problem of hollowed-out rights to state and defend, a mandatory, streamlined and efficient in-process objection trigger should be embedded to fully- or semi-automated penalty workflows. When the party receives a penalty notice through government apps, mini-programs or other portals, if the party immediately raises a reasonable objection that can be determined through a formal review (e.g. arguing that the vehicle was cloned or the fine occurred when yielding to an emergency vehicle) and the objection is determined to be obviously reasonable through a formal review, the system should automatically accept the objection and immediately pause the automated penalty workflow or transfer the case to a manual review channel. This measure aims to transfer the exercise of right to state and defend from after the decision takes effect to before the decision takes effect, restoring the procedural function as a "braking mechanism". For clearly unreasonable objections, the system can prompt the party to provide supplementary explanations to improve efficiency.

Third, elevate "manual review" to a meaningful review. Legally specify that the "manual review" mentioned in Article 41 of the Administrative Penalty Law must include substantive review rather than a superficial formality check. What does the reviewer know and how is he/she independent? His/her review scope should include factual findings, adequacy of evidence, legality of application, and rationality of algorithmic review results. Legally stipulate that "the review decision overrides the original algorithmic decision." Whether the review affirms or reverses the original penalty decision, the legally binding effect is the review decision made after the review. This greatly increases the procedural significance of manual reviews, making it a gatekeeper for justice in individual cases.

Fourth, consider adaptive procedures such as "online hearings". For automated penalty cases that meet statutory requirements for hearings, actively develop and implement models for "online hearings". Establish a video conferencing model for hearings, with technologies such as video conferencing, asynchronous messaging, and electronic exchange of evidence materials to create a virtual hearing room. This not only accommodates special circumstances such as pandemics, but also meets the efficiency requirements of digital administration. However, online hearings must ensure that procedural safeguards are on par with traditional hearings: that is, hearings with

neutral chairs, ample opportunities for parties to present evidence and cross-examination, and complete evidence files. Moreover, adapted to the characteristics of algorithmic cases, there should be a dedicated part for discussing issues related to the application of algorithms (Yu Lingyun, 2021)[19]. Parties should be allowed to invite technical expert witnesses to attend, both reviewing the fairness and accuracy of algorithms.

By functionally breathing life into the due process clauses in this way, we bring the rights process back to life. In efficient, automated workflows, we embed rational dialogue, oversight and safeguards for rights.

4.3 Protecting Rights: Oversight and Remedies

No remedy, no rights. Facing the remedial obstacles created by automated penalties, the entire oversight and redress system should be reinforced to ensure those affected receive effective and timely judicial and administrative protection when their rights are impaired.

First, strengthen the 'right to algorithmic explanation' as a procedural right. Legal provisions should clearly recognize this right as an important procedural right for those affected by automated decisions. This right has two components: first, the right to receive an easily understandable, personalized explanation regarding one's own situation; second, the right to request comprehensive clarification of the operative logic of the algorithmic system when one's rights are substantially impaired. Administrative agencies cannot simply fall back on the justification 'automatically generated by the system'. They must be able to trace and clarify the relevant basis and reasoning steps of the basis judgment of the algorithm (Wang Qingbin, 2020)[20]. This right is the prior condition for the parties to effectively enjoy their right to statement, defense and remedy.

Second, calibrate the scope and intensity of judicial review. When handling cases of automated penalties, judges should shift from "outcome review focused on formal elements of legal validity" to "review focusing both on process and outcome, not limited to elements of formal legal validity". In addition to the traditional formal legal validity elements, the review should further address the following issues: (i) Legality of the algorithm: Whether it enjoys clear legal authorization and meets the filed discretion benchmarks; (ii) Procedural fairness: Whether the digital due process procedures of notification, objection and review were actually implemented; (iii) Integrity of evidence: Whether the electronic data used by the algorithm were complete, reliable and undamaged throughout the process of generation, extraction, storage and derivation. As for the review standards, the courts should no longer apply the lenient "formalistic review" standard, but adopt an "enhanced reasonableness review" standard. That is, the courts can require the administrative agency to show that its algorithm is fair, prudent and reliable in both design and implementation. When the parties make well-grounded objections, the courts are entitled to request intensive disclosures from the administrative agencies. In addition, the courts may resort to third party technical audits or expert evidences to judge whether the algorithm shows systemic biases or errors (Chen Kexiang, 2024)[21].

Third, establish a "technical juror" or "amicus curiae" system. To mitigate judges' technical knowledge deficiencies, we may learn from international experience in recruiting "technical jurors" to handle complicated algorithmic cases. Non-professional judges, together with professional judges, on collegiate panels, would determine technical factual issues. We should actively develop an "amicus curiae" system, and invite neutral research institutions and industry organizations to submit expert opinions on technical issues to the court, thereby offering intellectual support for judges when they make their rulings, and ensuring that opinions on technical disputes are adjudicated authoritatively and fairly.

Fourth, establish a diversified external oversight network. Apart from judicial redress, we should further strengthen internal and external supervision within the administrative system. On the internal level, higher-level administrative bodies and judicial administrative departments should regularly carry out "algorithm audits" on automated penalty systems implemented by their subordinate agencies to assess their implementation effects, fairness, and legality. On the external level, we should give full play to the supervisory functions of the People's Congress and audit oversight, and conduct special inspections on major automated law enforcement projects. At the same time, we should encourage the establishment of independent, industry-specific algorithm ethics committees to conduct ethical evaluations and public reviews on administrative algorithms implemented by administrative agencies and facing the public. This will create a diversified and multidimensional supervisory network that supervises problems before they occur.

By doing so, we can establish a solid line of right defense, such that when automated systems deviate, those affected have the ability and means to challenge and obtain a fair adjudication.

4.4 Liability Regulation: Clarifying and Allocating Legal Responsibility for Automated Administrative Penalties?

Clear division of responsibility is the foundation of any legal system. Automated administrative penalties involve multiple legal relationships, so we need to establish a continuous chain of responsibility that runs through the process to establish its rule-of-law foundation.

First, follow the principle of "administrative principal responsibility." No matter what the technological development, we must not waver from the constitutional principle that administrative entities remain the primary bearers of responsibility for administrative power. Automated systems are just tools for administrative entities to exercise their authority. So, for all legal consequences that are triggered by automated administrative penalties, including the reversal of illegal facts and state compensation, the ultimate bearer of responsibility must be the administrative agency that made the penalty decision or the organization that was authorized by law or regulation to make the decision. This can also urge administrative entities to be more cautious when introducing (Mao, Mingchen, 2020)[22], manage, and supervise the technological tools they employ, preventing them from evading responsibility under the pretext of "technological neutrality" or "algorithmic autonomy."

Second, construct a liability chain of "fault and recourse." Although administrative entities are responsible for full external liability, they must clarify internal accountability. If the damage can be attributed to the technology provider—namely, the technology provider seriously violated algorithms, failed to provide services as contracted, or committed cybercrimes—after an administrative entity compensates the damaged party, it has the right to seek recourse from the faulty entity according to the liability clauses in government procurement contracts or technical service contracts (that is, administrative entities seek compensation from technology providers). Therefore, governments' contracts with technology providers must specify quality requirements for services and liability for breaches of data security, algorithm effectiveness, and system operation. This is the second link in the chain of responsibility that requires technology providers to provide products and services with higher professional attention and due diligence.

Three, differentiate "development and operations" liability for liability. When we hold technology providers accountable, we should differentiate between "algorithm development liability" and "system operation liability." Development liability refers to whether there are inherent flaws, logical errors, or discriminatory biases in the algorithm model during the design process. Operational liability refers to whether system failures after deployment were caused by improper maintenance, data pollution, upgrade errors, etc. Only by distinguishing between "fault" can we more accurately attribute fault and subsequently define compensation liability. Regulatory audits and filing reviews focus on development liability, and routine oversight focuses on operational liability.

Four, clarify the supervisory and management responsibilities of public officials. Automation does not exempt specific public officials—typically supervisors and system administrators—from their responsibilities. They have the responsibility to exercise daily supervision and management over automated administration to ensure its legality. If illegal penalties and damages are caused by intentional acts or gross negligence on the part of public officials—such as ignoring obvious vulnerabilities in the system, abusing system privileges, tampering with data, or not performing the manual verification work they are required to do—then they should bear corresponding administrative responsibility or even criminal responsibility according to the Civil Servant Law and relevant regulations. This ultimately leads to "individuals," ensuring that technology is ultimately controlled by man and serves man.

If we establish this complete chain of responsibility from "administrative entities bearing external liability" to "seeking compensation from technology providers" to "pursuing internal accountability of public officials," then in the era of automated administration, those who abuse power have no place to hide, and those who bear responsibility have a basis for their responsibility, providing the most basic security guarantee for the safe operation of the entire system.

5. Conclusion

The rise of automated administrative penalties is an inevitable product of public administration's transition into the digital age. While it delivers undeniable efficiency gains, it also poses profound structural challenges to the rule of law. This study demonstrates that the predicament is far from a mere technical issue of legal application. Rather, it represents a comprehensive assault by algorithms—a novel element of power—on the traditional administrative law framework built upon human rationality. The shift from administrative discretion to algorithmic discretion undermines the very foundation of law-based administration. The transition from "face-to-face" to "machine-to-human" procedures erodes the traditional safeguarding function of due process. Meanwhile, information asymmetry and obstructed avenues for redress have weakened the rights position of affected parties.

Faced with this systemic challenge, piecemeal fixes are no longer sufficient. Proactive, systematic reconstruction is imperative. The proposed four-pronged approach—rules, procedures, rights, and responsibilities—forms an organic whole where each element interlocks and mutually reinforces the others. Rule-based governance serves as the logical starting point for legitimate operation; procedural reconstruction provides dynamic safeguards for procedural justice; rights reinforcement constitutes the fundamental purpose of institutional design; and liability regulation acts as the ultimate deterrent ensuring all norms are implemented. This framework aims to embed

technology within the rule of law's framework, rather than allowing the rule of law to yield to technological logic.

Ultimately, in the era of automated administration, the core proposition of the rule of law remains unchanged—only its implementation scenarios and methods have evolved. Our task is not to obstruct technological progress, but to ensure, through legal innovation and theoretical renewal, that efficiency gains do not come at the expense of fairness, justice, and human dignity. Ensuring algorithms operate within regulatory boundaries, enabling programs to thrive in digital spaces, upholding rights against technological advances, and clarifying accountability within complex systems—these are both the essential path to resolving current challenges in automated administrative penalties and the imperative requirements for building a future-oriented digital administrative legal system.

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