Exploring Practical Pathways for the Legitimacy of Algorithm-Driven Automated Administrative Activities

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Abstract

In the era of algorithms, algorithmic administration presents the dual effects of efficiency improvement and procedural risk, and the tension between its operation logic and traditional administration needs to be systematically studied. Combined with the characteristics of digital technology, the analytical framework of technical due process is constructed, which helps to establish a procedural regulation mode compatible with the characteristics of algorithm. Currently, the core elements of publicity and participation in traditional administrative procedures, such as, are facing problems such as algorithmic black box, data defects, algorithmic discrimination and technological monopoly. These problems hinder public participation, violate the principle of administrative openness, and result in automated decision-making discretionary inaccuracies. In response to these procedural crises caused by algorithmic characteristics, the development of technical due process theory can be adapted from three links: in the input link, the establishment of algorithmic evaluation system to identify whether the algorithm has a negative impact on the public and to measure the degree of its effect; in the operation link, the construction of algorithmic bias correction mechanism and vulnerable groups relief system to reduce discrimination and protect the public interest; in the output link, the strengthening of the algorithmic explanation system to enhance decision-making. In the output segment, the algorithm explanation system is strengthened to enhance the transparency of decision-making, thus realizing the contemporary development of the principle of due process and boosting the rule of law process of China's digital government construction.

Keywords

1. Introduction

In today's world, the Internet, artificial intelligence, algorithms, big data and other emerging technological achievements are working together to drive the fourth industrial revolution. Intelligent algorithmic technology gradually transcends traditional forms of procedures and relies on big data and deep learning to continuously improve automated decision-making capabilities. At the same time, the digital era has arrived, and the fourth government revolution, which aims to optimize administration and improve service quality, is on the rise. China has followed the trend of the times, utilized digital technology to improve the way of government, and accelerated the pace of digital government construction. From "Internet+" to electronic evidence collection for penalties and intelligent administrative approval, from smart control of key personnel

to intelligent monitoring of illegal transactions, from electronic spreadsheets and data records to big data, blockchain, and artificial intelligence, the recently widely discussed Deepseek large language model has also been widely applied in government deployments across the country. Administrative activities such as management, service and regulation, which have traditionally relied on human labor, are beginning to transform into data transfer and smart administrative activities characterized by automation and even intelligence.

However, automated administration is also raising multi-layered issues and risk challenges such as algorithmic bias, discrimination and domination. In administrative practice, there are unavoidable and realistic questions: how to fully protect the rights and interests of the administrative relative in automated administrative activities? How should algorithms be accountable to the public? And how should algorithmic programs receive and respond to human opinions? In what way and on what principle should government data be open to the public? In China nowadays, the above issues are important research topics, in order to study these issues in depth, it is necessary to be based on the present, look into the future, and face the arrival of the era of artificial intelligence with a cautious and calm attitude.

2. The Two-way Effect of Intelligent Algorithm Embedded in Administrative Activities

In order to analyze the impact of algorithm embedding on administrative activities, the first step is to define the algorithm. Algorithmic decision-making based on human-computer interaction is a set of mechanisms for decision-making through code, data and automated judgment. Nowadays, the connotation of algorithms has been extended to all decision-making procedures or steps, which is a special form of rationality for setting steps and constructing social order to achieve a certain goal. Intelligent algorithms, on the other hand, are a technology that assists or even replaces human work through deep learning. From the perspective of comparative law, compared with other more mature algorithmic control system, China's current practice of automated administrative behavior needs to be further improved to meet the requirements of the principle of due process.

2.1 Algorithm Application to Enhance the Efficiency of Automated Administrative Activities

Intelligent algorithms are widely used in administrative activities, which has a profound impact on the effectiveness of government governance. Algorithmic technology significantly improves administrative efficiency and promotes the intelligent transformation of administrative management. From the perspective of improving administrative efficiency, the application of intelligent algorithms has realized a qualitative leap in the government's information collection ability. The dimension of data collection extends from traditional single structured data to multi-source heterogeneous data, including text, images, audio and other unstructured data. This comprehensive data collection capability provides the foundation for constructing a more accurate profile of administrative counterparts.

At the information processing level, the algorithmic automated decision-making system rapidly processes and intelligently analyzes massive administrative data through machine learning and big data analysis technologies. For example, in the field of market supervision, the algorithmic system can analyze enterprise operation data in real time, automatically identify abnormal operation behavior, and shorten the risk warning time from the traditional weeks to real-time warning. This efficient data processing and analysis capability enables administrative agencies to quickly complete tasks such as administrative license approval and administrative penalty determination that would otherwise require a large amount of human and material resources. As a result, the speed and quality of information processing by the government is greatly improved, effectively enhancing the breadth and density of administrative power operation activities and promoting the realization of the principle of efficiency and convenience.

In terms of risk prevention and control, the application of algorithmic prediction models has significantly improved the accuracy of administrative supervision. For example, machine-learning-based risk prediction models have achieved an accuracy rate of more than 85% in areas such as food safety and financial regulation (Shabsigh, 2023). This predictive capability enables administrative agencies to shift from post-

event supervision to pre-event prevention, thereby effectively improving the efficiency of social governance. Algorithmic automated decision-making is widely used to alleviate the information asymmetry between the administrative organs and the relative people, thus further increasing the depth and precision of the operation of government power.

2.2 Algorithmic Intervention Leads to the Breakdown of Due Process in Automated Administration

Intelligent algorithms, while improving administrative efficiency, can also cause administrative due process failures. Algorithms are inherently opaque and autonomous, and thus are able to generate decisions through independent learning from data in the absence of adequate supervision and disclosure, thereby leveraging the savage growth of the public power system and gradually breaking away from the category of instrumentalization. In the process of automated decision-making, the public has no way to question its mistakes, coupled with the lack of corresponding government regulations, which in turn creates the risk of alienation of power.

First of all, in the series of problems caused by algorithmic due process failure, the most direct and representative is the "algorithmic black box". Intelligent algorithms, due to their opacity, form an algorithmic black box in the decision-making process, which to a certain extent relies on technology to dominate human beings, and the public is ruled by algorithms but is unable to resist. For example, some teachers have been fired by algorithms, some people of color have been over-enforced by criminal alert systems, and many people at the bottom have been exploited by financial models. These algorithmic applications have devastating consequences. Second, algorithm misuse, abuse, and even alienation may further create certain systemic risks, such as the intrusion of personal privacy and data protection, the dysfunctional operation of public power, and the infringement of civil rights, etc., and the systemic failures derived from these algorithms in automated decision-making have even directly triggered public litigation. The existing algorithmic system cannot completely avoid the negative impacts of algorithmic alienation, and thus it is urgent to update the regulatory approach and the corresponding system. Finally, in addition to systemic risks, the widespread use of algorithms also brings the problem of algorithmic discrimination. Algorithms can reproduce or even reinforce biases already implicit in the data, with adverse effects on specific groups. Eubanks (2021), in *Automatic Inequality*, argues that when big data analytics and algorithms are applied to relief activities for the poor and working class, algorithmic mechanisms further reinforce traditional moral inclinations and punitive consequences. In the face of algorithmic discrimination and its adverse consequences, we need to apply equal protection principles and theories in response.

3. New Developments in Technological Due Process

3.1 Connotation and Impact of Due Process Principles

In discussing the application of the principle of due process, it is first necessary to define and clarify the meaning, characteristics and core issues of the principle of due process. The principle of due process means that when an administrative decision unfavorable to the party concerned is made, the party concerned should be informed, listened to and justified, and the basic principles of procedural fairness and transparency should be ensured(He, 2008). The due process model has the following characteristics: it focuses on the process of administrative behavior, emphasizes on the rational design of administrative procedures, and takes reasonable control of administrative power as its ultimate goal. Based on its basic connotation and characteristics, the principle of due process in the administrative field also involves two core issues, namely, "what interests are protected by the principle or how is it applied" and "what is due process".

The principle of due process has continued to develop in the digital age, with its own unique value and outstanding influence. On the epistemological level, due process can be used to measure the legality of legal procedures, and can also be used to supplement the provisions of administrative acts without clear legal procedures. In essence, due process is conducive to the protection of civil rights not explicitly provided for in the statute, and can distill certain basic due process requirements. Ultimately, substantive due process can realize the protection of individual rights and liberties by constraining power.

However, the implementation of due process principles in actual administrative activities has not been easy. In recent years, due process has been increasingly embedded in administrative activities along with automated systems, and has therefore faced more and more challenges and impacts. In the final analysis, it is due to the fact that in the automated decision-making process in practice, procedural elements such as notification, defense, statement and clarification are often missing, thus leading to the partial loss of the principle of due process, which in turn fails to fully safeguard the legitimate rights of the administrative counterparts. Therefore, in the era of automated administration and digital government, there is still a long way to go before the principle of due process can be fully utilized.

3.2   The Path of Algorithmic Technology Embedding the Principle of Due Process

In algorithmic governance, algorithmic technology is combined with traditional due process to realize the new development of technical due process. This process mainly relies on the two-way articulation of technical standards and legal rules, as well as the construction of dynamic compliance review to realize. The combination of technical standards and legal rules is the foundation of algorithmic governance; technical standards provide operational tools for legal rules, while legal rules set value boundaries for technical practices, and the two work together to promote technical due process to follow the footsteps of the times. For example, in the fields of environment, health and safety, technical standards (e.g., environmental quality standards, food safety standards) rationally characterize facts through scientific methods and provide factual guidance for legal norms. This two-way interface can ensure that algorithmic governance not only meets technical rationality, but also satisfies the requirements of legal legitimacy, so as to realize the development and perfection of technical due process in this field.

In addition, the combination of algorithms and the principle of legitimacy also relies on the algorithmic transparency grading system. Algorithmic transparency needs to find a balance between the protection of trade secrets and system security and the public's right to know. The EU's Artificial Intelligence Act emphasizes the whole-process regulation model and proposes a risk-graded disclosure plan that combines regulatory intensity with scenarios and objectives: high-risk algorithms (e.g., public credit scoring, law enforcement prediction systems, etc.) are required to submit their full code to the regulator for filing and provide concise explanations of their decision-making logic to the counterparty; medium- and low-risk algorithms (such as government service recommendation systems) only need to disclose input-output relationships and impact assessment reports (European Union, 2024). The essence of this hierarchical system is to choose appropriate transparency obligations based on the principle of proportionality, so as to realize comprehensive and reasonable algorithmic accountability through the construction of a multi-dimensional algorithmic transparency mechanism. It can sufficiently effectively balance transparency and confidentiality (Lei, 2023), simultaneously guarantee the public's right to know and participation, and is an important way for algorithms to embed the principle of legitimacy.

From a developmental perspective, the dynamic compliance review process further promotes the development of technical justification principles. The continuous learning characteristics of algorithms require that the compliance review shift from "one-time certification" to full-life cycle compliance control, thus ensuring that the risks derived from algorithms at different stages can be prevented and the regulation of algorithms can be perfected through the three-phase review of algorithms in their full life cycle, i.e., design, deployment, and iteration, to realize the combined development in the long run. Through the two-way interface between technical standards and legal rules, the algorithm transparency grading system and the dynamic compliance review procedure construction, it can effectively solve the problem of fragmentation between traditional legal principles and technology, and this embedded path not only enhances the administrative efficiency, but also guarantees the legitimacy of power operation, and provides a procedural safeguard paradigm for algorithmic governance that is both stable and adaptive, and realizes the new development of technical due process.

3.3   Technical Reconstruction of Procedural Check and Balance Mechanism

The effective combination and development of traditional legitimacy principles and algorithmic technology cannot be separated from the effective checks and balances on algorithms. The technical

reconstruction of procedural checks and balances mechanism is mainly carried out from the two aspects of transparent control of algorithmic power operation and procedural rigidity constraints of human-computer collaborative decision-making.

Transparent control is the key to ensuring the legitimate and fair operation of algorithmic power. It is because of the continuous improvement of the duty to inform, public parameters, algorithmic interpretation and public source code and other systems and behaviors to improve the transparency of algorithmic decision-making that the basis of decision-making has been more embodied, and substantively safeguarded the citizens' right to know as well as other rights. This in turn alleviates to a certain extent the crisis of confidence in the risk of loss of control of algorithmic decision-making, and ultimately enables the new development of technical due process. At the level of specific paths, the administrative decision-making process can be certified with the help of blockchain technology, utilizing its non-tampering characteristics to ensure that the algorithmic decision-making records are complete and can be retrieved and verified at any time, in order to prevent algorithms from being changed and abused arbitrarily, to guarantee the consistency and traceability of algorithmic decision-making, and to improve the credibility of decision-making, and to build the foundation for the supervisory review and the development of technological due process.

In terms of human-computer relations, through the development of human-computer collaborative decision-making, increasing procedural rigidity constraints, retaining human intervention power, can further prevent algorithmic arbitrariness, can effectively avoid the loss of control of the algorithm, safeguard the decision-making reasonable and safe, and ensure that the decision-making is legitimate and fair. Therefore, the technical reconstruction of procedural check and balance mechanism is realized through transparent control and procedural rigidity constraints. Among them, transparent control gives credibility to algorithmic decision-making, while procedural rigidity constraints make clear the dominant position of human beings in key decisions. The two complement each other, and together provide stability and adaptability guarantee for algorithmic governance, weaving a tight normative network for the operation of algorithmic power, promoting the steady development of digital society on a standardized and orderly track, and escorting the new development of the principle of technological due process.

4.   The Application of Algorithms on Administrative Due Process Obstacles

The use of algorithms can certainly greatly enhance administrative efficiency, but also inevitably bring all kinds of risks. Algorithm black box, data flaws, algorithmic discrimination, and even technical monopoly, are constantly eroding the principle of administrative openness and due process principle foundation, impede public participation and damage to the interests of the public, resulting in automation of administrative activities chaos and disorder. Therefore, it is necessary to reconstruct the algorithmic law regulatory scheme in accordance with the technical due process and transparency requirements, to restore the imbalance algorithmic balance.

4.1   Algorithmic Black Box Violates the Principle of Administrative Openness

Algorithm application, its decision-making process is not fully known, which will produce certain deviations and errors and difficult to explain, resulting in "algorithm black box", that is, the specific performance of the algorithm opacity. The automated decision-making based on the algorithmic black box is characterized by many problems and risks. The most important and critical problem is that the public cannot understand the data processing process, but can only see the result output, and thus cannot understand and explain the complex internal operation process, which further blurs the causal relationship and attribution of responsibility, hinders the public's control over the internal operation mechanism of the algorithm, and directly violates the principle of administrative openness (Ji, 2023). Not only that, at the level of ex post remediation, the algorithmic black box also affects the relative's opportunity to challenge the output enforcement results, making it difficult for the public to obtain remedies when their interests are infringed upon. Finally, at the level of non-systemic risk, the algorithmic black box also largely hinders the effective control of algorithmic discrimination, whereby algorithms unintentionally clarify and solidify various social stereotypes, which in turn lead to miscarriages of justice and harm to some individuals.

The principle of administrative disclosure helps to regulate the algorithmic black box problem. By definition, the principle of administrative openness refers to the basic principle that administrative subjects should disclose the basis, process and results of power operation to the public according to the law when exercising power, so as to enable them to know and effectively participate in and supervise the operation of administrative power. Based on its connotation, the principle of openness has long been regarded as the foundation of procedural justice and the proper meaning of democratic politics, and contains extensive and profound value significance. On the individual level, administrative openness can promote the realization of citizens' right to know, guarantee effective participation and supervision of administrative activities; on the government itself, administrative openness can strengthen supervision, prevent corruption, help open and clean government construction; on the interaction between the two sides of the administration, administrative openness is conducive to the establishment of administrative communication, improve trust and cooperation between the government and the public, and is of far-reaching significance to the sustainable and healthy development of digital government and automated administration. It has far-reaching significance in the sustainable and healthy development of digital government and automated administration, and is the embodiment of social justice.

There is a certain tension between the black box of algorithms and the principle of administrative openness. Algorithms often impede or even prevent the principle of administrative openness from being practiced, while the government's heavy reliance on technology can exacerbate the negative impact of algorithmic opacity. Therefore, it requires us to balance the relationship between automated decision-making and the principle of administrative openness, and to comprehensively integrate the interests of the government, the public, and enterprises: not only do we need enterprises to disclose part of the algorithmic information, but also we need to protect their commercial secrets and competitive advantages, and finally, we need to implement the effective supervision of the public. With the introduction and landing of algorithm governance norms continued, algorithms will no longer be an extra-legal place for barbaric growth.

4.2   Data Defects and Algorithmic Discrimination Erode Administrative Due Process

Since automated systems rely heavily on various types of information in databases to make decisions, they are highly dependent on data, which amplifies the adverse consequences of data flaws. If the source of the data is faulty or flawed, such as incomplete data, or information that is not updated in a timely manner, then the conclusions drawn from it are biased or even erroneous. For example, in the process of generating the health code, there are cases in which the red code cannot be corrected on the spot due to errors in filling in the wrong code; for example, the inherent defects of some electronic monitoring equipment lead to incorrectly recognizing a certain behavior, which in turn leads to incorrect judgments; and for example, in the process of granting social welfare and relief funds in some regions, data entry errors or untimely updating of the information lead to some eligible women and children being unable to obtain due assistance in a timely manner. This has resulted in some eligible women and children not being able to receive the assistance they deserve in a timely manner. Such data deficiencies not only jeopardize the legitimate rights and interests of women and children, but also violate the requirement of administrative due process to protect the rights and interests of vulnerable groups.

In addition to data flaws, administrative due process can be eroded by the discriminatory messages implicit in the data itself and the algorithmic discrimination based on it. While the data itself reflects real-life, psychosocial, public biases, traditional power structures and cultural biases, algorithms reproduce and reinforce the biases in the data, which can lead to disparate consequences or even outright discrimination in parts of the process of engaging in automated administrative decision-making, resulting in a detrimental impact on a particular group of people (Ding, 2020). Algorithmic discrimination, i.e., the phenomenon of algorithms engaging in automated decision-making that incorporates biases such as personal preferences and exceeds reasonable limits, thereby committing and amplifying discriminatory behavior. Today, digital information technology embeddedness and big data failures further contribute to algorithmic discrimination and its adverse impacts, allowing unequal automated decision-making to take place in the absence of due process principle constraints (Ji, 2023). For example, governments can create " inequality of access to ," because and do not guarantee the legitimate interest of different people to have equal access to digital public services (Su, 2023a). The state of Arkansas in the United States uses an algorithmic health resource

allocation system to replace the traditional manual assessment, and an intelligent algorithmic system carries out the whole process of autonomous analysis and judgment in order to complete the allocation of medical resources. However, the algorithm's discrimination in this process not only caused a large number of people to suffer from discriminatory treatment from the algorithm's autonomous decision-making, but also resulted in decision-making errors and unjust consequences. As another example, in the job market, some companies refer to the credit scores of job applicants to decide whether to hire them, but the credit scoring system may have data flaws or algorithmic discrimination. In some areas, incomplete data collection has resulted in lower credit scores for some low-income groups, which in turn has resulted in loss of employment opportunities. Such decisions based on inaccurate data or biased algorithms are not only unfair to individuals, but also violate the principle of equality in employment and erode the fairness and impartiality required by administrative due process. These cases fully illustrate that data defects and algorithmic discrimination have far-reaching and serious impacts on different groups of people, and must be regulated through legal and institutional means to ensure the realization of administrative due process. Therefore, it is necessary to respond to the problem of algorithmic discrimination by applying the principles and theories of equal protection, prohibiting algorithms from making unreasonable distinctions and discriminating against different groups, guarding social order and fairness and justice, and returning to the essential requirements of the principle of administrative legitimacy.

4.3 Technical Monopoly Hinders Public Participation

As an important part of the principle of administrative due process, the principle of public participation is also affected by the impact of the development of algorithm technology. As far as the definition is concerned, the principle of public participation is the public to participate in the process of administrative power to express their views on the operation of administrative power to play an effective role in the basic principles. When the principle of public participation is specifically implemented in administrative participation, it is embodied in fair hearing, which means that the administrative subject is obliged to listen to the opinions and claims of the parties, and the relative cannot be deprived of the right to defense. It emphasizes the participation in the process of administrative power operation, that is, the administrative subject to exercise power and the relative to participate in the process of administrative interaction. In terms of its value and significance, the principle of administrative participation is a product of the continuous development of the theory of democratic participation, which can carry out the will of the administrative subject, and bring legitimacy, acceptability, accuracy, and efficiency to administrative activities, but also to deepen the two sides of the administration to understand each other and communicate with each other, so as to make the relationship between the administrative law is really bipartite. However, as algorithms are widely used in administrative activities, the principle of public participation will face double obstacles from technological monopoly.

First, public participation in administrative activities faces the obstacle of technological monopoly of private enterprises. Due to the opacity of the algorithm technology itself, and the protection of commercial secrets and core technical information such as source code by private enterprises, the public lacks the opportunity to understand the operation principle of these technologies, and it is difficult to integrate their own value judgments and claims into the automated administrative activities, and even more so, it is not possible to control the abuse of administrative power in the procedure. Secondly, the operation process of automated administrative behavior is monopolized by administrative organs and technology companies, in which the administrative relative does not have the opportunity to state and defend. Algorithmic automated decision-making not only avoids the public participation and hearing of administrative decision-making, but also dissolves the procedure of statement and defense of the parties at the level of specific administrative behavior, resulting in the absence of the principle of public participation.

5. Practical Progression Improvement of Automated Administrative Justification

In order to solve the risks and problems brought about by algorithms embedded in administrative activities, it is necessary to explore the legitimacy of the automated administration of the practice of the road, the establishment of a unified early warning mechanism, assessment mechanism and relief mechanism

normative system. And through empowerment mechanisms and authorization mechanisms to give full play to the will of the public, to build an automated system of public participation, to realize the disclosure of information, exchange of communication, control of risk, and clarity of responsibility (Lei, 2023), to promote the two-way fusion of technology and the rule of law, and to improve the practice of automated administration approach.

5.1 Improvement of Algorithmic Evaluation System Based on Public Opinion

In the digital age, the algorithmic assessment system plays an important role in measuring the impact of algorithms in a wide range of fields such as personal information protection, data security, and algorithm design, utilization and deployment. In terms of the principles and content of assessment, in the algorithm assessment mechanism in the administrative field, regulatory authorities need to conduct a comprehensive impact assessment of administrative algorithm decisions in terms of performance, fairness, transparency, explainability, privacy and security, efficiency and timeliness, and cost. The specific content of this assessment should include the detailed description of the algorithm and its objectives, the public's right of access to and modification of the decision results, the impact of the algorithm on the privacy and security of personal information, and its discriminatory consequences. Among the forms and contents of algorithmic assessment, the most important aspect is still the requirement of algorithmic transparency, which takes into account both the data and the algorithms themselves, and is an important requirement in the design of the impact assessment mechanism, but the degree of transparency and the specific forms of the algorithms should be considered in the context of the specific scenarios of the algorithms' application. At the result output level, the algorithmic assessment report needs to use plain and simple language, be published directly on the government website, and be subject to regularized public supervision.

In terms of supplementary means, algorithm auditing, an innovative assessment mechanism, can be introduced. Article 54 of China's Personal Information Protection Law stipulates that "personal information processors shall regularly conduct compliance audits of their handling of personal information in compliance with laws and administrative regulations", and Article 64 mentions "entrusting professional organizations to conduct compliance audits of their personal information processing activities". Article 64 also refers to "entrusting professional organizations to conduct compliance audits of their personal information processing activities". The Guidance also states that audit supervision should be strengthened (Xinhua, 2021). In essence, the algorithmic audit system is an algorithmic governance system that independently checks the decision-making process of algorithms in a scientific way and communicates the results to stakeholders. By reviewing and evaluating the input data, design principles, and output results of algorithms, it is able to effectively identify whether there are bias and discrimination in algorithms, thus ensuring the fairness, transparency, and compliance of algorithms.

In order to protect people's interests, fully automated administrative behavior should be avoided to directly act on the parties themselves. As an important safeguard mechanism, algorithmic evaluation must be made a mandatory procedure for the entry into force of administrative acts, thus ensuring that citizens have the legitimate right to manually intervene in the automated decision-making of algorithms.

5.2 Regulation of Algorithmic Discrimination and Remedies for Vulnerable Groups

In the regulation of algorithmic laws aimed at improving algorithmic automated decision-making, market and architectural models can be introduced in order to reduce the emergence of discriminatory phenomena. On the one hand, the discrimination problem can be solved by the market logic and the demand for user information transparency satisfied in the competition. On the other hand, the discrimination problem can be realized by technical means and institutional design to realize the architectural solution (Wang & Zhang, 2024). The problem of digital discrimination arises mainly because individuals are deprived of the right to express themselves, and are continuously categorized and deprived of opportunities in their interactions with algorithms, thus falling into a vicious cycle step by step.

And in the problem of algorithmic discrimination, the most vulnerable are often various vulnerable groups. Therefore, in the process of automated administration, it is also particularly necessary to protect the interests of vulnerable groups, such as the elderly, people in remote areas, people with low literacy levels,

people with disabilities, and so on, otherwise it may constitute a new form of discrimination in the digital era (Ma, 2019). In terms of the specific content of the relief mechanism, the administrative body should provide the public with convenient and direct non-litigation relief channels such as questioning, complaining, reporting, etc., and smooth administrative reconsideration and administrative litigation relief channels, so as to ensure that the public is able to exercise the right to supervision and relief based on participation in administration and the maintenance of rights. The legal status of administrative agencies as the responsible entities for algorithmic decision-making should be clearly established, and in the allocation of the burden of proof or the interpretation of related issues, the perspective of the party involved should be prioritized. This approach was established in the case of "Tian Zhipeng v. Xi'an Municipal Public Security Bureau Zhanqian Branch Administrative Penalty Dispute Case," where it was determined that responsibility for algorithmic decision-making should be attributed to the authority behind the machine's actions (Lei, 2023). It emphasized that administrative authorities must still bear legal responsibility when using automated systems to make administrative decisions, and must follow the principle of due process to protect the legitimate rights and interests of the public. This judgment is an important model for preventing algorithmic discrimination in automated administration and protecting the interests of vulnerable groups.

5.3   Algorithmic Interpretation of Administrative Behavior and Transparency Enhancement

Since algorithms are characterized by two major features, namely, difficulty in understanding and non-intuitiveness, they have created problems such as algorithmic opacity and algorithmic black box. In this context, administrative law enforcement agencies and their public sector are difficult to effectively control the operation of automated administrative activities (Feng, 2022). Therefore, in order to implement the principle of administrative openness, it is necessary to derive the right of algorithmic interpretation based on algorithmic transparency.

Algorithmic transparency is essentially an information regulatory mechanism, is an important principle of algorithmic law and order, but also the inevitable choice under the development trend of social digitization, intelligence and automation. It is more helpful to alleviate the public's concern and anxiety about the loss of decision-making autonomy. In terms of its manifestation, from the clear obligation to report the parameters, all the way to the public parameters, algorithmic interpretation and even public source code, etc., are all important ways of algorithmic transparency and the practice of concretization (Wang, 2020). Among the many ways of practicing algorithmic transparency, algorithmic explanation is the most common one. In the era of algorithmic governance, it is reasonable to further develop the algorithmic interpretation right to explain the specific administrative behavior, that is, in the application of algorithmic automated decision-making should adhere to the full justification for its administrative behavior. The essence of the right to algorithmic interpretation is to put the algorithmic black box problem in the scope of the principle of administrative openness, and to give the administrative subject a certain algorithmic interpretation obligation, in order to promote the openness and transparency of administrative law enforcement. Algorithmic interpretation of administrative behavior has its own standards that must be followed, it should not only make the relative fully understand the principle and process of automated decision-making, should also provide the automated decision-making to amend the method. In terms of content, the specific algorithmic explanation should include the reasons and causes of decision-making, as well as the personal data that produce the results of decision-making. Formally, algorithmic explanations should follow a uniform format, have clear and plain language, follow requirements, and retain evidence (Zhang, 2020). It is of great significance to incorporate algorithmic explanation into the administrative disclosure system, and the construction of a proper system of algorithmic explanation right can help administrative subjects to enhance the interpretability and rationality of algorithmic output results, deepen the public's understanding of the rationality of administrative decision-making, and safeguard the administrative relative's right to information, participation, and supervision. Considering that the automated administrative system involves important public interests, further discussion on the black box of algorithms, algorithmic interpretation, and algorithmic transparency is indispensable.

5.4   Optimization of Automated Administrative Processes by Technical Due Process

In order to ultimately achieve the goal of optimizing the automated administrative process and practicing the principle of administrative legitimacy, it is necessary to improve the technical due process. This needs to be implemented extensively and at multiple levels through the construction of an early warning mechanism, the improvement of manual intervention, and the empowerment of individuals at three levels: before, during, and after the fact. In order to avoid the risk of legality and legitimacy arising from technical problems, it is necessary to set up an early warning mechanism in the procedure and to impose an obligation on administrative organs to intervene manually. First, in terms of early warning mechanism, administrative organs should set up monitoring system to eliminate technical deviation of algorithmic decision-making, and use algorithmic deviation elimination program to ensure that code structure, data quality, system function, etc. comply with technical and normative requirements of algorithmic decision-making legitimacy, and take proper way to adjust decision-making model to eliminate algorithmic deviation. At the level of specific technical implementation, a risk identification system can be set up in the code program to identify and discover situations that may deviate from normal decision-making in a timely manner.

Secondly, administrative activities cannot rely entirely on algorithms and automated decision-making, but must introduce mechanisms for human intervention. Institutionally, administrative organs should be given discretionary authority to intervene manually and be obliged to carry out intervening activities. To establish and improve the structured manual intervention mechanism, in addition to establishing the right of explanation and defense for the automated administrative process, the administrative subject should also provide the parties with various ways to participate in hearings, obtain notification, verify evidence, manually listen to the statements and pleadings, verify data or information, review the results of the processing, algorithmic accountability mechanism, public selection procedures, manually review the conclusions of the automated system judgment and the results of the processing, and so on (Feng, 2022). Thus, it is formed that manual interaction, review and relief system adapted to automated government affairs, and ultimately realize administrative supervision and correction of algorithms (Ma, 2019). At the same time, a manual review mechanism can be introduced to prevent the harmful effects of wrong judgment made directly by the automated system. This mechanism can not only provide the administrative relative with the opportunity to conduct manual review and retain the ability to respond to and challenge the decision made by the machine, but also play an important role as a bottom-up safeguard mechanism to prevent the risk of legitimacy (Su, 2023b). Therefore, before the automated administrative program makes important large administrative decisions, the administrative organs should always insist on taking the initiative to manually review and intervene in the automated decisions and results.

Furthermore, improvements should be made in three stages: before, during, and after. The pre-event supervision mechanism mainly includes testing, evaluation, and certification of automated systems. During the event, a review and coordination mechanism for manual processing should be incorporated. After the event, emphasis should be placed on implementing measures such as publicizing approval results, online complaints, random checks of materials, and recording credit information. In short, it is necessary to guarantee the people's full participation in all aspects of administrative behavior, and to monitor the various automated systems used in automated decision-making throughout the entire process. The implementation of full participation of the public in the whole process of automated decision-making helps to overcome the crisis of trust in automated decision-making from three aspects of information sharing, communication and error correction for the public; for the administrative subject, it can improve the transparency of administrative law enforcement, and limit the excessive exercise of administrative power; in terms of the interaction between the two, it is more capable of improving the public's understanding and judgment of automated administration, and strengthening the communication ability of the administrative relative and the administrative organ, so as to better improve the communication ability of both sides. In terms of the interaction between the two, it can improve the understanding and judgment ability of the public towards the automated administration, strengthen the communication ability of the administrative relative and the administrative organ, and thus better maintain the subject position of the people in the process of automated administration.

Finally, as a new product of the development of the digital era, technical due process, compared with the traditional due process, more emphasis on the relative and even the public system empowerment and empowerment. Specifically, it is manifested that, through improving and perfecting the mechanism of empowering personal data rights, giving citizens the right to personal data, establishing after-the-fact relief system, strengthening industry self-regulation and introducing the third party to participate in cooperative governance, etc., it comprehensively enhances the ability of administrative relative and other main subjects to participate in administrative activities and challenge irrational administrative decisions, which enables technical due process to give full play to the role of safeguarding its rights and maintaining the dignity of the human subject. This will enable technical due process to give full play to its role in safeguarding rights and maintaining the dignity of human subjects, and help realize the balanced goal of administrative law in the digital era (Ma, 2020). The deeper the data and algorithms penetrate into the administrative process, the more important it is to assume the obligations of strengthening early warning, principle of disclosure, full information, effective communication, manual review and personal empowerment, and to accept the supervision and responsibility of the relevant departments and the public in the whole process, so as to protect the administrative rule of law and the cornerstone of procedural justice. To this end, procedural justice must be realized in automated administrative activities in order to safeguard the value of human dignity and legitimate rights in administrative procedures, and to practically practice the principle of administrative due process.

6. Conclusion: Technical Due Process and the Future Development of Automated Administration

As Hraley once warned in A Brief History of the Future, filled with anxiety, "Once power is handed over from humans to algorithms, the subject of human literacy may be tragically obsolete" (Harari, 2017). Now, new technologies represented by artificial intelligence are profoundly changing people's lives, automated decision-making is booming, and the construction of China's digital government is in full swing. The country's government is improving its governance model and better realizing its administrative tasks through automated administration and other means. However, the risks and challenges such as algorithmic alienation, algorithmic black box, and algorithmic discrimination brought by such changes are also far-reaching and extensive. Thus, how to reasonably regulate the algorithmic technology in administrative automation decision-making within the legal framework has become an urgent task in the construction of the rule of law in digital government.

Therefore, we urgently need to follow the basic requirements of the administrative due process system. First of all, it is necessary to cognitively change the view of algorithms and rebuild human trust in technology. Second, algorithms should be regulated through algorithm disclosure, personal data empowerment, anti-algorithmic discrimination and other specific ways. In the process, it is necessary to lead the whole process of continuous improvement of legal practice with the core of human subjects, and to fully guarantee human dignity in legal practice activities. In order to truly find a balanced path between technological development, administrative effectiveness and social acceptance. This can create important institutional conditions for China's current stage of administrative rule of law to move toward "good governance," and can further promote law-based administration, comprehensively build a rule-of-law government, and establish a rule-of-law state. Only by delving into the automated administrative process to explore the rationale and approach of technical due process can we safeguard the dam of procedural justice in the wave of information technology, ensuring that the development of administrative procedures aligns with the demands of the times and effectively addresses the new challenges brought by technological advancements and social transformations, thereby realizing the eternal pursuit of procedural justice.

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