

Risk and Governance Strategies: China's Big Data Policing in the Context of Marxian Alienation Theory

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Abstract

Big data technology has been deeply integrated into all areas of society and has had a profound impact on all areas. Big data technology has also brought a series of impacts, some even disruptive to the justice sector. In judicial activities, police departments in various countries are using big data technology extensively in two functions: crime prevention and crime fighting. In crime prevention, big data technology is mainly used to predict where crimes are likely to be committed and the subjects or victims of the crimes that are likely to be committed. In crime fighting, big data technology can help the police quickly identify or analyse a range of information relating to a suspect, including socioeconomic, interpersonal and object relationships. However, some risks of alienation may also arise in the process of police crime prevention and crime fighting. This paper attempts to apply the unique perspective of Marx's alienation theory, focusing on the fascinating Eastern country, to firstly analyse in depth a series of alienation risks that may arise from the use of big data technology analysis in Chinese policing activities, and then, on this basis, propose a few targeted governance strategies accordingly, to provide useful experiences for scholars studying big data policing activities and those concerned with big data applications in Chinese policing activities.

Keywords: alienation theory, big data policing, Chinese policing activity, risk and governance

1. Introduction

With the deepening development of the fourth industrial revolution, information technology represented by big data continues to have a profound impact on the social structure and people's lives (Lin, 2022). Under the influence of big data technology and advanced high-tech manufacturing, all corners of people's lives are filled with intelligent and digital products, and people are generating a large amount of data anytime and anywhere. In recent years, various big data technologies have been refined to the extent that in some fields, "everything can be counted" and "everything can be counted at any time", and individual people are gradually replaced by strings of digital symbols. In the digital network, communication between people is no longer the traditional face-to-face reality of dialogue, but rather a collision between numbers and numbers. However, with the rapid development of big data, there are also a series of risks of technological alienation, such as the alienation of big data technology from a subordinate position to a dominant position, and the alienation of tool attributes to value attributes.

To apply alienation theory to the analysis of policing in China, we first need to briefly understand the origins of alienation theory. The term "alienation" first appeared in the Confessions and the Old Testament in the Middle Ages, describing the alienation of individuals from each other, insanity and other abnormal states. Later, Marx further developed the theory of alienation in his *Philosophical Manuscripts on Economics* of 1844, elevating it to the level of political economy and philosophy to analyse the various relationships between workers and the economy and society. However, Marx's alienation can be analysed not only for economic facts but also for a wide range of social phenomena, such as the analysis of the current use of big data technology in judicial activities. Big data is widely used by police departments in judicial activities to prevent crime and fight crime. In the use of big data by the police, a series of alienations occur, such as the alienation of results, the alienation of processes, the alienation of human nature and the alienation of human relationships. In short, the alienation of results refers to the possibility of a certain degree of bias in the results of big data analysis, the alienation of process refers to the possibility of excessive invasion of personal privacy in policing activities, and the alienation of human nature refers to the transformation of individuals from "real

people" to "digital people", and the alienation of human relationships. The alienation of human nature refers to the transformation of the individual from a "real person" to a "digital person", and the alienation of human relationships refers to the significant impact of big data technology on social and personal ethics. This paper attempts to apply Marx's alienation theory to analyse the phenomenon of alienation in Chinese policing activities in depth and put forward some targeted governance recommendations, to provide some ideas for the police to use big data to improve their social governance capacity.

The paper is structured as follows. The first part briefly introduces the research direction of the paper and describes the general research content of the paper. The second part briefly outlines the basic situation of big data development, and briefly compares the development status of big data technology in China and worldwide. The third part focuses on the specific connotation of Marx's alienation theory, laying the foundation for the subsequent in-depth analysis of the risks and governance countermeasures of the application of big data technology in Chinese policing activities. The fourth part discusses the risks of alienation of big data technology in policing activities, with the study focusing on the possible risks of big data technology application in Chinese policing activities. The fifth section provides some targeted recommendations on the specific risks that may be encountered in the application of big data in Chinese policing activities as discussed in the fourth section, which will provide useful references for future research in this area. The sixth section briefly summarises this paper's research content and conclusions and provides an outlook on possible future research directions.

2. An Overview of Current Big Data Developments

People's social life is gradually entering the era represented by digitalisation and informatisation. From a worldwide perspective, big data is evolving in both theory and practice. Through the observation and analysis of the development of big data technology, we can broadly understand the specific positioning of big data in the current development.

2.1 A Broad Overview of Big Data Development

Big Data was first introduced by the famous American futurist Alvin Toffler in 1980 in his book "The Third Wave", and called it "the colorful music of the third wave", thus Big Data began to enter people's vision (Toffler, 2006). In 2008, Nature, one of the world's leading journals, launched a special issue on "Big Data", "focusing on big data in various scientific fields (Zhang, Gao, & Shen, 2022). Since then, big data has entered the academic world and gradually become a hot topic in major research fields. In the field of criminal justice, big data technology is valued by police departments in various countries, and big data technology is widely used in the daily judicial activities of police officers. The Los Angeles Police Department (Egbert, 2018) in the US, the West Midlands Police Department (Pramanik, Lau, Yue, Ye, & Li, 2017) in the UK, the Munich Police Department (Egbert & Krasmann, 2020) in Germany, the Basel Police Department (Egbert & Krasmann, 2020) in Switzerland, the Netherlands Amsterdam Police Department (Peeters & Schuilenburg, 2018), Delhi Police Department in India (Alikhademi et al., 2022) and the South African Police Service (Pramanik et al., 2017) all use big data technologies in their daily judicial activities to prevent and control crime (Wang, 2019). Big data technology is officially recognised to some extent in the police departments of various countries.

In 2013, the Chinese Academy of Sciences held the Xiangshan Science Conference with the theme of "Scientific Principles and Development Prospects of Data Science and Big Data", which kicked off the research boom of "Big Data" in China and was regarded as the first year of Big Data in China (Zhang et al., 2022). In 2014, the concept of "big data" was officially introduced in China's Government Work Report, and big data was defined as a "fundamental strategic resource" (China State Council, 2014). In 2015, the State Council issued the Action Plan for Promoting the Development of Big Data, which comprehensively promotes the development and application of Big Data in China (China State Council, 2015a). In November 2015, the 13th Five-Year Plan proposed for the first time the implementation of a national big data strategy (China State Council, 2015b). In 2017, Chinese President Xi proposed "implementing the national big data strategy to accelerate the construction of Digital China", further promoting the development of big data in China (Xinhua Network, 2017). In March 2021, the Chinese government released the 14th Five-Year Plan for National Economic and Social Development and Outline of Visionary Goals for 2035, which included big data as a key industry in the digital economy (China State Council, 2021). In January 2022, the State Council issued the "14th Five-Year Plan for the Development of the Digital Economy", which specifies the data element as the core engine for the deepening development of the digital economy (China State Council, 2022). Further focus on data as a key object of socio-economic development.

Society is a complex system, and big data, as a record of social behavioural trajectories, is also a complex system (Fan, 2018). Big data as an emerging technology cannot escape from the two sides inherent in technology, that is, while big data brings convenience to people, it also inevitably has a certain degree of risk and even brings a certain degree of damage. In China, big data is widely used in criminal justice activities, such as carrying out various forms of judicial activities such as big data policing, big data prosecution, big data trial and big data judicial correction, etc. Due to the

limitation of space in this article, this paper focuses on the specific application of big data in Chinese policing activities and tries to uncover the inner logic of big data application in Chinese policing.

2.2 Application of Big Data Technology in Chinese Policing Activities

In the era of big data, digital technology is structurally changing human existence and living space (Qin, 2021). In the field of policing activities, the introduction of big data is of great significance, not only helping police staff to improve their work efficiency, but also providing them with the best solutions to optimise the allocation of police resources, which can be considered a powerful tool for modern policing activities. The original purpose of the application of big data in judicial and social governance is to combat crime, prevent crime, promote the smooth integration of special groups into society, and maintain the overall harmony and stability of society (Fu, 2021). In policing activities, the application of big data is also mainly focused on two types of functions: crime prediction and crime fighting.

Crime prevention, where police staff collect and analyse large amounts of data to predict where crime is likely to occur or individuals with a high probability of committing a criminal act. Crime prevention can be simply divided into two categories: one is human-targeted crime prevention, which is the use of big data to identify some specific individuals or groups with a high risk of committing a crime among criminals or victims who are easy targets for criminals (Brayne, 2018). Human-targeted crime prevention mostly targets violent sexual offending, mainly by identifying groups in social life that have a high element of violence or are vulnerable to violent attacks. Another type of crime prevention is location-based crime prevention, which uses data records of crimes that have historically occurred in a defined area to predict when, where, and in what areas, etc., crimes are more likely to occur in the future (Brayne, 2018). Location-based crime prevention focuses on property-based crimes, such as burglary and robbery, and is mainly based on historical crime data to predict in advance the hotspots and periods where crimes are likely to occur in the future, and pre-deploy police to reduce the likelihood of crimes occurring in the hotspots, and this type mainly targets relatively small areas of occurrence Role.

Combating crime, i.e. using various big data technologies such as network link analysis, intelligent agents, communication bill analysis, text mining, neural networks, machine learning (Hu, 2018), crime data profiling, and big data visualization (Milaninia, 2020) etc. to quickly and precisely locate the perpetrators of crimes and crack down on them. In China, by effectively fighting crime, especially in vicious cases and new types of crime, the public security authorities can gain more recognition and trust from society and strengthen their position (Hu & Zhang, 2021). In China's policing activities, the use of big data to combat crime is also subject to the constraints of safeguarding human rights, so that a balance can be struck between fighting crime and safeguarding human rights (Liu & Chen, 2021), without overemphasising either side.

After briefly understanding the development of big data from both world and Chinese dimensions, this paper attempts to apply Marx's alienation theory of more than a hundred years ago to conduct an in-depth analysis of big data participation in policing activities, to uncover the potential risks behind big data policing activities, and to provide useful governance solutions to enhance the big data governance capacity of police workers to accurately prevent and efficiently combat criminal acts.

3. Specific Implications of Marx's Theory of Alienation

Engels once said, "Theoretical thinking in every age, including our own, is a product of history, which has a completely different form and at the same time a completely different content in different ages." (Han, 2022; Sun, 2018). Just as Engels stated that theoretical thinking possesses completely different forms and contents in different times, alienation theory also exhibits different forms and contents in the era of big data. Although "alienation" was an important concept proposed by Marx in his early years (Su & Guo, 2019), in the era of big data, the form and content of the theory may be completely different from its initial form, and some people may feel that the theory has become outdated and can no longer explain the rapid development of modern civilisation well rapid development. However, although the theory of alienation was Marx's ideological perspective more than a hundred years ago, the connotations inherent in society in its essence have not changed significantly, and alienation remains an inescapable problem in the era of big data. There is still a high research value in exploring the alienation of big data, and the theory is still very much alive in today's society, and still has strong explanatory power in explaining policing activities in China.

In general, Marx's theory of alienation has four specific connotations: first, the alienation of the labourer from the product of his labour. In his *Philosophical Manuscripts on Economics of 1844*, Marx refers to an interesting economic fact: "The more wealth the labourer produces, the greater the power and quantity of its products, the poorer he becomes. The more commodities the labourer creates, the more he becomes a cheap commodity" (Marx, 1979). In a way, this is an anomaly in which the outcome of the labourer occurs far from the labourer's expectations. In labour, the more the worker works, the more value and wealth he is supposed to obtain, yet the reality is the opposite of his expectations, if not the exact opposite, leading to greater poverty and the paradoxical phenomenon of the poor becoming poorer the

harder they work, while some in society are in the opposite situation, able to reap most of society's resources and wealth without working.

Secondly, the worker is alienated from his labour. Marx argues that worker alienation is not only in the result of production but also in the act of production itself, i.e. the activity of labour (Marx, 1979). Workers do not affirm themselves in their labour, but constantly deny themselves, in complete contrast to the normal expectation that labour brings happiness; they do not feel happy but often unhappy, and do not freely use their physical and mental powers, but subject themselves to physical damage and mental destruction. Labour feels free only when it is not working, but when it is caught up in the activity of working, it feels constrained, repressed and uncomfortable. The worker is relieved when he is not working, but is on pins and needles when he is working. Thus, his work is not voluntary, but a forced and compulsory one. A clear manifestation of the alienating nature of labour is that as soon as the physical or other coercion of labour disappears, people flee from it like the bubonic plague (Marx, 1979). The second type of alienation can be seen as the alienation of the labour process, in which the individual's motivation to work deviated. Labour is supposed to bring happiness and pleasure, but after alienation, it brings people a real unhappiness and lack of freedom.

Thirdly, the worker is alienated from his or her class nature. According to Marx, "Man is a being of the class. Man takes the class - both his class and the class of other things - as his object, both in practice and in theory". In terms of human nature, man's alienating labour alienates from man (1) nature; (2) himself, his active function, his vital activity, and thus also alienates the class from man, it turns the life of the class spoken of man into a means of sustaining the life of the individual (Marx, 1979). Man's class essence - whether it be nature or his mental, class faculties - becomes alien to man's essence, a means of sustaining his existence. Alienating labour alienates man's own body from man, just as it alienates nature, which is outside him, from his spiritual essence, his human essence (Marx, 1979). The alienation of the labourer from his class essence can be seen as the fact that, while the labourer as a universal should originally have consistent goals and pursuits, the different individual labourers have more specific needs beyond the type to which they belong and are no longer satisfied with merely subordinating themselves to the universal needs of the class to which they belong.

Fourthly, the alienation of man in relation to man as a real result of the alienation of things, the alienation of man's self, and the alienation of man's class essence. The immediate result of the fact that man is alienated from the products of his labour, from his life activity, and his class essence, is that man is alienated from the man himself (Marx, 1979). When man, in opposition to himself, has separated himself from the category to which he belongs and become alien to himself, then of course others are also opposed to him. The alienation of man, in general, means that any relation of man to himself is manifested and represented only through the relation of man to others. Under the conditions of alienated labour, each person observes others according to the position and perspective in which he is situated as a worker (Marx, 1979), and rarely from the perspective of the non-subject. The alienation of human relations is a necessary consequence of the first three kinds of alienation. After the first three kinds of alienation have occurred, they inevitably give rise to the alienation of the human-person relationship. At the same time, the consequences of this alienation of human relations affect the first three alienations and have certain countervailing effects, making these alienations more easily felt.

4. Risk of Alienation of Big Data Technologies in Chinese Policing Activities

Big data is regarded as the "oil" of the fourth industrial revolution, and while countries are actively promoting the development of information technology, it will inevitably lead to some risks of alienation that are difficult to avoid. In China's policing activities, the risk of alienation from big data technology is mainly reflected in the following aspects.

4.1 Alienation of Results: Big Data Analytics Results May Be Biased

In the era of Big Data, the richer the output of workers using Big Data, the cheaper and less valued or even questioned the results, and accordingly, the poorer and more disadvantaged the workers of Big Data are. In big data labour, although the workers using big data technology appear to create a lot of social wealth, the social wealth they create can also be regarded as "big data rubbish" or "big data waste" to a certain extent. The alienation of Big Data results in Chinese policing is reflected in three main areas: historical bias, representativeness bias and measurement bias.

4.1.1 Historical Bias

Historical bias in big data analytics results refers to the fact that big data analytics results are derived from the analysis of past historical data, and that the results are biased by historical data. In Chinese policing, when police officers use large amounts of historical crime data to predict and analyse crime suspects or crime hotspots, the results of the analysis may be significantly underestimated based on these past crime data. For example, in a reciprocal loop (Browning & Arrigo, 2021), if burglaries occur frequently in a particular neighbourhood, big data analysis will make that neighbourhood a priority area for the prevention of burglary, and accordingly, police deployment to that neighbourhood

will increase, resulting in an overload of police allocation and exacerbating the original situation frequency. However, neighbourhoods with little or no history of burglary will show an under-deployment of police. While to some extent the allocation of police resources to different areas as a result of big data analysis can have a positive effect on the efficiency and targeting of crime prevention and combating, such deployment based on historical crime data is not able to respond to all situations that occur in the reality of society as a whole. If such police deployment is exploited by burglary criminals or if there is a sudden outbreak of a large number of burglaries at a certain time in a neighbourhood where no burglaries have occurred, reliance on past crime data could have a huge impact or become a "black swan" event with huge vulnerabilities.

4.1.2 Representative Bias

Representational bias is one of the more common phenomena in the alienation of big data results. Representation bias is also common in Chinese policing activities, where police collect what appears to be de facto big data, but is selective big data. Representation bias falls into two main categories: firstly, the data is insufficiently representative; and secondly, the groups are inadequately represented.

Insufficiently representation of data, mainly in the form of "crime black numbers". Crime is a normative phenomenon that depends on human values, which, however, change over time and place. "The 'crime black count' refers to the phenomenon of unreported and unsubstantiated crimes in criminal justice activities, which for various reasons do not fully document the actual crime (Završnik, 2021). The existence of crime black numbers leads to the fact that crime history data is not a true representation of all crimes in the real world, that there are still a large number of unrecorded crimes, and the data available to the police is only the data known to the police and not all of it.

Inadequate representation of groups, i.e. different social groups does not have the same amount of criminal records. The criminal records of the wealthy class are generally under-recorded (Marda & Narayan, 2020). In some specific crimes, such as white-collar crime, corporate crime, financial and financial fields and other intellectual group crime cases, the concealment of crime methods, the complexity of crime techniques and the difficulty of detecting such crime cases make the historical data recorded for these categories of criminals limited, which does not fully reflect the entire social group crime. The crime history data obtained is only a small part of the entire criminal group and does not cover all crimes in practice. Some powerful or economically privileged groups may use their political or economic status to gain privileged access to criminal records, resulting in a superficially numerical record that is not a complete reflection of the real world.

4.1.3 Measurement Bias

Measurement bias refers to the fact that there are some inaccuracies in the measurement of Big Data. Big data analysis mainly uses correlations between different things for analysis, rather than causality analysis. In criminal cases, analysis of the facts of the case according to traditional causality yields inevitable results areas results according to correlation analysis in the era of big data are not inevitable, but only have a likelihood between the act and the fact, and this likelihood can be extremely maladaptive when applied to the determination of criminal offences where there is a high degree of caution. Correlation results are not a substitute for necessary results, and some of the results of big data analysis may not prove useful in proving the facts of a case. From a Marxian dialectical materialist point of view, everything in the world is universally connected and the possibility of a connection exists between any two things, and while the results of big data analysis are derived from the analysis of the data, the extent to which this result occurs is not necessarily 100% certain in all cases. In many cases, Big Data analysis of any two unrelated things can be analysed to show that there is some degree of connection between the two. If we use the results of the such probabilistic analysis to determine the facts of criminal offences that are more intrusive to individual citizens, it is highly likely to lead to a large number of wrongful convictions in society, allowing big data technology to erode people. In addition, measurement bias can be caused by the lack of uniformity in measurement tools, the lack of precision in the input data, and differences in the standards of each system, which can lead to measurements that do not reflect the fairness and justice they are intended to achieve.

4.2 Alienation of the Process: Big Data Policing Might Violate Personal Privacy

Police activities require the police to perform a great deal of work in collecting and analysing data, and in the process of collecting and analysing data, there is an alienation of process. The alienation of the process is primarily the risk of excessive interference with the private rights of individual citizens and invasion of privacy by the police as a public authority.

Firstly, according to Marx, labour is something external, that is to say, something that is not part of his essence (Marx, 1979). The police officer is also a labourer in his policing activities. When the police collect, analyse and use big data, they are only processing something external to the data as such, and the process of processing this data is not something

external to the essence of the police, it is something outside the essence of the police. These things outside the essence of the police are derived from individual citizens who are private subjects, such as personal interests, preferences, property status, consumption records, internet records, etc. The collection and analysis of these data by the police will inevitably cause interference with the rights of individual citizens, and even individual citizens become a transparent individuals under the augmentation of big data, posing a strong risk to the privacy of individual citizens.

Secondly, the worker is relieved when he is not working, and feels constrained and uncomfortable all the time when he is working. A very striking manifestation of the alienating nature of labour is that as soon as the physical or other social coercion of labour disappears, people turn away from it as if they were avoiding the bubonic plague. External labour, the labour in which man externalises himself, is a self-sacrificing, self-internalising, self-destructive labour (Marx, 1979). When police officers use big data to analyse cases, because of internal performance appraisals, section management systems, various bureaucratic administrative systems and the constraints of the detection rate of cases, these labours are not done voluntarily when police officers use big data technology but are constrained by internal management mechanisms and task targets. As a result, police officers are also very uncomfortable and on pins and needles when using big data technology under stressful working conditions and are subject to the compulsory constraints of the system. The use of big data by police officers is a process of externalising themselves in the process of big data analysis, and although they are in the process of doing so, it is in a sense self-destructive, self-consuming and unwilling labour.

Finally, for the worker, the external nature of labour is expressed in the fact that this labour does not come from the inner world, but originates from external compulsion; it does not belong to him; nor is he in the process of labour a reflection of his inner real world, but rather it is labour done for the will or desire of others (Marx, 1979). When the police use big data technology to analyse and mine various data, this labour does not belong to the individual police officer; the police officer is only the opener, not the controller, of big data technology. After the police have switched on Big Data, the police do not have full control over the Big Data technology but are constrained by the rules of the algorithms embedded in Big Data, and in a sense perhaps by the rules of the algorithm designers. To some extent, the police may even be seen as a tool to enforce the consciousness of the algorithm's designer, completely divorced from its subjectivity as a law enforcer. Although on the surface, big data technology appears to operate in the hands of the police, it cannot simply be assumed that the specific operation of big data technology is also under the control of the individual police officer. To a large extent, the police are simply not aware of the inner logic of how big data works, let alone control it. When a police officer uses big data technology for case analysis, it becomes clear that this labour is not his own, but maybe the labour of the algorithm engineers behind it. Similarly, the police officer's labour is not a reflection of his inner real world, and in the process of policing labour may only be to fulfill an expectation imposed on them by the outside world, and the labour they do belongs to others not involuntarily and willingly done by the police officer from his inner world, and the police officer is only the controller of big data in a superficial and formal sense, not in a substantive sense. As a result, in some grassroots policing practices in China, some police officers even feel that Big Data is a hindrance rather than a help to their law enforcement activities. In other words, the use of big data has created more problems.

4.3 Alienation of Human Nature: Shift from "Real People" to "Digital People"

Man is a class being, both practically and theoretically treating the class as its object (Marx, 1979). Whether in man or animals, the life of the class manifests itself in material terms: man (like the animals) depends on inorganic nature to live, and the more extensive man's capacities are about those of the animals. Then the more extensive the inorganic nature by which man lives can be covered (Marx, 1979). Man's omnipotence is precisely his transformation of the whole of nature into the inorganic body of man. In terms of the nature of man's category, man's alienating labour is twofold: the alienation of man from nature, and the alienation of man's active functions from the category to which he belongs, seeing that part of man which belongs to the human category as simply a means or a way of sustaining individual life (Marx, 1979).

4.3.1 Alienation of Policing Activities from the Natural World

The French philosopher of technology Jaques Ellul once said: "Technology is a force that alienates people and invades all parts of social life. The increasing autonomy of technology itself is the result of mankind's increasing inaction under the lust of technology" (Huang, 2011). Human beings are essentially human beings living in the real physical space, however, in the era of big data, human beings are gradually weakening the weight of the real physical world and turning more to virtual spaces such as data networks, and the natural attributes of human nature are gradually taking a back seat. Although human beings still have basic needs in the physical space, the value of human beings in the data space is increasing in society, and human beings are gradually becoming "digital human beings" or a kind of virtual human beings or numbers, and the human-like nature is gradually being data-driven. In the process of the datafication of

human nature, human freedom is also disappearing, and the social needs of human beings are gradually shifting from the natural needs of reality to the data value needs of the data world.

In policing activities, the need for big data is not only causing the police to move from physical space to data space in preventing and combating crime, policing activities are becoming data-driven. Certain cybercrime acts are also moving with it from physical space to data space, gradually moving away from the natural world, and criminal activities are also becoming data-driven. The importance of data is self-evident as both policing and criminal activities are becoming data-driven, and with it comes data risk. In policing, the data risk is that the police will become too dependent on big data when using it, leading to a 'data dictatorship'. Data dictatorship in police activities means that when police officers carry out judicial activities, such as using Big Data to carry out Big Data investigations, they lack independent subjective value judgments and base their judicial activities on the results of Big Data, which is an entire "Big Data" centric. Regardless of the results of the data, the results given by big data are taken as the preferred option, and even in the case of obvious errors, the results of big data are still taken as the basis for handling the case. Conversely, the risk of alienation of big data in policing activities can also give rise to another strange phenomenon, i.e. while the alienation of policing activities leads to excessive reliance on big data technologies, at the same time the application of big data technologies in police departments can be hindered by traditional bureaucracies, creating a new model of policing work that is alienated from both traditional policing activities and big data policing activities. At the same time, a state of affairs that combines the traditional policing model with the big data policing model can also arise.

4.3.2 Alienation of Policing Activities as a Means of Maintaining the Survival of Police Functions

After the alienation of big data from nature in policing activities, it may also be alienated as a means of maintaining functional existence. It is well known that the police have as their vocation the prevention of crime and the fight against it. In the era of big data, the police have developed greatly in the extent and scope of their use of big data. In judicial practice, the police have used big data as the main means and tool for investigating various cases, and big data investigation appears in almost every criminal case handled by public security organs, and big data participation in police activities has become a regular pattern (Cheng, 2018). The involvement of big data has undoubtedly brought great help to the police, but it may also lead to an over-reliance on big data in policing activities, blindly believing in its power and ignoring its limitations, forming a "myth" (Brayne & Christin, 2021) or a "technology cult" of big data. "technology cult". In judicial practice, two kinds of alienation are likely to occur: first, the role of big data in police activities is overstated, and its application to the field and scope are arbitrarily expanded, and even in some special types of cases it is regarded as the only means to solve cases; second, to solve cases as soon as possible to forcefully promote the process of big data in judicial activities, such as forcing big data as an important indicator for case investigation, police officers also unconsciously use big data as a means for police officers to perform their duties and maintain their survival, and handle cases all by big data, without which it is difficult to walk.

4.4 Alienation of Human Relations: Implications for Social and Personal Ethics

The immediate result of the fact that man is alienated from the results of his labour, his life-work, and his class nature, is the alienation of man from man, that is, the alienation of man from his relations with each other (Marx, 1979). Generally speaking, the alienation of man is that any relation of man to himself is only a hidden internal relation, which can only be better detected and expressed in society through the external relations of man with other men. Man's internal relation to himself can only have an object, social and real relation to him through his external relation to other people. Any self-alienation of man from himself and nature is expressed through that relation which he has between himself and nature and others who are different from him (Marx, 1979). Through alienating labour, man produces not only his relation to the objects and acts of production as alien and hostile forces, but also the relation of others to his production and his products, and his relation to these others (Marx, 1979). One of the most striking manifestations of the alienation of human relations by Big Data in policing activities is its impact on ethics. Given the opaque nature of how big data algorithms work, police officers are also vulnerable to a range of ethical risks when using big data. The many ethical risks posed by Big Data can be briefly divided into two areas.

4.4.1 Excessive Emphasis on Mathematical and Scientific Analysis at the Expense of Humanistic Care

In the era of big data, people may not be familiar with each other in the physical space, but in the data space, the relationship between people may show exponential changes, and more people are only known to us in the data space but do not intersect in the physical space, which leads to the weakening of people in the physical space and the formation and gradual strengthening of people in the data space. This leads to a weakening of the person in physical space and the formation and gradual strengthening of the person in data space.

In police activities, when police use big data technology to assist in improving the quality of crime prevention and

fighting activities, they tend to focus on quantitative analysis of big data and lack a humanistic interpretation of the results. The relationship between the police, as public authorities, and private subjects are supposed to be a realistic human relationship, but with the involvement of big data, the relationship between the police and individual citizens has become more of a mere data relationship. The formerly human-centred relationship has become a data-centred relationship. In policing activities, the police pay more attention to the collection, analysis and mining of data on cases and parties, and pay more attention to the relationships between data, while the human relationships between people are relatively weak. In some cases, the police do not even need to have a relationship with the data subject when collecting data, and therefore cannot take into account the specific physical space in which they are located. In such cases, the data subject is not even aware that his or her data is being used by the police for a criminal case. It is undeniable that the use of data by the police as an evaluation criterion for the processing of cases can in many cases lead to quite satisfactory results, but in exceptional cases such as self-defence, emergency evasion or certain extenuating circumstances, it is difficult to distinguish these exceptional cases from the normal ones by relying on big data alone. If humanist concerns are omitted in these cases, it will not only result in wrongful convictions but also cause widespread controversy in society.

4.4.2 Exacerbating Real-World Discrimination in More Insidious Forms

In the era of big data, it was expected that big data technology would make society more fair and just and police justice more objective, but big data may make policing activities appear less objective and possibly false objectivity more insidiously and may even exacerbate the discrimination that used to exist in physical space.

In traditional policing, discrimination may exist in terms of geography, gender, ethnicity, race, religion, culture and so on, and it is very easy to detect discrimination in traditional policing. Some people may think that discrimination in traditional policing activities will disappear in the era of big data, but in fact, discrimination in traditional policing activities may not disappear, but it may be displayed in a more hidden way, which is more difficult to be noticed. On the fact of it, the use of big data in policing is based entirely on the analysis of large amounts of data, which is objective and the results of which are certainly objective, and there is no possibility of discrimination. However, in essence, it is possible that the presence of big data in policing activities is not as objective and impartial as it may seem. The figures may also not be as objective as they seem and police officers may have some deliberate influence on the data. It is well known that police officers also have a certain amount of choice and discretion in their policing activities. In collecting, screening and analysing data, they may inadvertently incorporate some geographical, gender, ethnic, racial, religious and cultural discrimination, which in the long run creates a vicious circle and unconsciously exacerbates discrimination and inequality in the real world, causing injustice to the disadvantaged and marginalised groups in society (Lavorgna & Ugwudike, 2021).

5. Governance Strategies for the Alienation of Big Data Technology in Policing Applications

Although Marx lived more than a hundred years ago in a time when he could not have imagined the powerful impact that mobile digital networks and big data technologies could have on the fabric of society, he experienced the same profound impact of industrial development on the fabric of society as we do. Only Marx experienced the leap from the First Industrial Revolution to the Second Industrial Revolution, while we are in the process of leaping from the Third Industrial Revolution to the Fourth Industrial Revolution (Chen, 2021). While big data brings convenience to policing activities, it also comes with a series of risks, and to better control these risks, we need to adopt some targeted measures.

5.1 Objective and Fair Treatment of Big Data Analysis Results

5.1.1 Results of Big Data Are Used as a Reference Factor Only, not as a Determinant

Big data algorithms should serve people rather than manipulate and slave them, and we should be more autonomous rather than obedient and more human-centred (Kieslich, Keller, & Starke, 2022) than a chine- or tool-centred when dealing with the results of big data analysis. Big data algorithms produce results based only on quantitative analysis of past historical data and cannot be used to confirm future facts that have not yet occurred. In policing activities, when algorithms produce results, they should not be used directly as the sole determinant, but only as a reference factor for decision-makers. In the decision-making process, big data results are only used as a reference factor for the decision. They should only be used as scientifically sound support for a decision if they are corroborated by other evidence or if other social conditions give the same reference results. Big data blindness should also be appropriately accommodated when applying data results. To avoid data dictatorship, it is important not to deploy relatively few police resources just because the big data results show that there are no criminal records in a certain area, or that there are low crime records. In this way, the impact of historical biases in big data can be reduced in the event of a black swan event.

5.1.2 Focus on Comprehensiveness of Data to Eliminate Representativeness Bias

Under-representation of data and under-representation of groups in policing activities are two major sources of

representativeness bias in big data results. To properly eliminate the representativeness bias of big data results, improvements can be made in two ways.

Firstly, data is collected using a combination of "traditional + big data" methods. As we all know, one of the most prominent manifestations of representational bias is the "crime black count", which for various reasons cannot be completely eradicated. Therefore, we should adopt a combination of "traditional + modern" data collection methods, i.e. combining the original collection methods in policing activities with big data technology, to collect a wider range of crime data, to restore as much of the real situation in society as possible, and to get as close to the overall picture of society as possible.

Secondly, different categories can be set up separately for different social groups for big data analysis. According to Marx's theory of alienation, relying solely on big data techniques in policing activities, based on historical crime data can easily produce biases in the performance of the results in terms of groups. This makes the results of big data analysis favourable to some groups and harmful to others. The favouring of favourable groups, such as white-collar criminals and corporate criminals, will also be less valued with the under-representation of big data analysis results, while the fight against common criminals, such as burglars and fraudsters, will be exacerbated and may present a more unfavourable situation for such common criminals. This creates a vicious circle (Završnik, 2020), making it easier to ignore the criminal behaviour of smaller sample groups, while the criminal behaviour of larger sample sizes is given disproportionate attention. To effectively overcome this bias due to the proportional representation of social groups, special types of crimes can be classified separately to avoid weakening some important types of crimes when the police use big data. Otherwise, there is a risk of falling into a speculative crime prediction (Peeters & Schuilenburg, 2018).

5.1.3 Establishing a System for Identifying Multiple Significant Data Results to Minimise Measurement Bias

Measurement bias is primarily a result of how Big Data works, which analyses correlations between data rather than causal relationships. Although Big Data has a massive scale of data, it is not inevitable that the greater the quantity and size of the data the greater the value. In policing, measurement bias is frowned upon, especially when it comes to proving the guilt or innocence of perpetrators. At the same time, measurement errors are difficult to detect due to the opaque nature of Big Data's algorithms. To prevent measurement errors from causing unnecessary problems in policing activities, the following points can be addressed: First, multiple algorithms can be used to corroborate each other in big data policing activities, to increase the probability of the final result being correct. Secondly, an algorithmic cumulative system can be adopted, and multiple cumulative systems can be adopted for such weak correlations of big data to reach stronger credibility (Wang, 2018); Thirdly, the final evaluation of big data results should still be made by human beings as the final value judgment (Simmons, 2018). One cannot simply believe in the absolute correctness of big data results, and whether or not to adopt big data results should still involve subjective factors of human beings.

5.2 Big Data Analysis Procedures Optimized to Enhance Privacy Protection and Regulate Police Enforcement

In the course of policing activities, the use of Big Data by the police may cause excessive invasion of personal privacy. For this reason, the procedures for the use of Big Data may be regulated in the course of police use of Big Data.

Firstly, the principle of necessity should be adhered to when processing data in policing activities. Only data relevant to the processing of criminal cases should be collected and analysed to minimise the infringement of the privacy of individual citizens. As we all know, big data can abstract personal data to form a "digital person" by collecting digital information such as personal interests, preferences, internet records and online shopping records, and behind the "digital person" lies the huge individual privacy of individual citizens. In the era of big data, the alienation of the human being has never been greater, especially in certain areas such as policing, where the police can almost see through the big data databases at their disposal to a specific individual citizen. The natural freedom and individuality of the citizen are broken down and the individual becomes a "one-way person" in Marcuse's sense. Police activities that do not restrict the collection of data and collect as much data as possible from the data subject can result in excessive interference with the privacy of the data subject. When collecting data, the police should similarly focus on the scope and extent of data collection, trying to collect as much data as possible that is relevant to the case while keeping data that contains private or sensitive information about citizens within reasonable limits and not causing unnecessary harm to citizens (Ventrella, 2020).

Secondly, the internal appraisal mechanism should be scientifically and rationally formulated to transform it into a process of self-satisfaction and self-fulfilment and to reduce reluctant labour and self-sacrifice. The essence of police activity is that it is a kind of external labour of the police profession. This particular kind of work is supposed to represent the vocation of the police. But when big data intervene, police activity alienates into a phenomenon of labour for labour's sake, solving cases for the sake of solving them, and labouring to fulfil internal assessment targets. In this process of focusing only on the pursuit of form, the police use big data in their work to prevent and combat crime not out of choice, but simply to fulfill the internal assessment targets of their agencies. At this stage, the existence of

internal assessment indicators for police agencies is somewhat realistic and unavoidable. For this reason, the internal assessment mechanism of the police can be improved by setting more assessment indicators, a more comprehensive evaluation of police labour in preventing and fighting crime, setting more procedures that can provide the police with self-fulfilment and self-satisfaction, and alleviating the pressure and self-sacrifice of the police in their labour.

Finally, the training of police personnel in big data skills should be increased so that frontline case officers can better understand the principles of big data work, better control big data technology, and enhance the ability of police officers to control big data technology in judicial activities, and gradually weaken the formal initiator status of the police. In the design process of big data algorithms for policing, the police can intervene at the very beginning of the design of big data algorithms and supervise the design activities of algorithm engineers to prevent big data algorithms from being overly guided by the values of algorithm engineers. In policing activities, the police can gradually transform into modifiers of big data rules when they encounter problems in practice, enhance the discourse and weight of police officers in big data judicial practice activities, increase police control over the process of big data labour, and promote the transformation of the police from initiators to controllers of big data technology, and the evolution of big data policing labour from the labour of algorithm engineers to the labour of police subjects.

5.3 Strategies for Responding to the Alienation of the Nature of the Class in Big Data Policing Activities

According to Marx's alienation theory, the alienation of the nature of the policing activity class in the era of big data can also be divided into two aspects: firstly, the alienation from the original physical space to the data space; and secondly, the alienation of policing activities to data activities, and the alienation of police activities simply as a means of maintaining their essence - preventing and combating crime. To better cope with these two kinds of alienation, the following two aspects can be addressed.

5.3.1 Identify the Nature of Big Data and Enhance Police Subjectivity

As big data technology continues to develop and the objectification of people deepens, "machines are not freeing workers from their labour, they are making their labour contentless." (Marx, 1983). In the era of big data, traditional policing activities have shifted from physical space to data space, and the reliance of the police on big data has gradually increased, and the over-reliance on big data makes policing activities prone to "data dictatorship". The reason for the "data dictatorship" in policing is that the nature of big data has not been truly understood. In essence, big data, as an emerging technology, is used as an auxiliary tool in policing activities to help police officers better detect crime clues and thus better prevent and combat crime. However, in practice, many police agencies or staff fail to treat big data correctly and blindly submit to big data technology. For this reason, we should clarify the nature of big data - big data is only a technical tool and cannot replace the police in making value judgments on cases. In policing activities, it is still necessary for the police to play a subjective function to judge whether an act constitutes a crime and whether criminal responsibility needs to be pursued, rather than blindly leaving it to big data to make these decisions. There is a shift from a "big data" focus to a police officer-centred focus, avoiding the myth of data fetishism. Concern for the human being itself should always be the main goal of all technological endeavours (Einstein, 2017), i.e. the human being, not the technology, must be the ultimate source of value judgements, for the optimal development of the human being and not just for the execution of external tasks (Fromm, 1968).

5.3.2 Identify the types and scope of application of big data in policing activities and rationalise its efficacy

Marx's theory of alienation holds that labour itself, productive activity itself, becomes for a man no more than a special means of satisfying one of his special needs, namely the need to maintain the physical survival of the worker's biological attributes. In the era of big data, big data in policing activities is alienated as a means of survival, if not the only means, of maintaining police functions. The extent and scope of policing activities have expanded tremendously, and big data has become the regular mode and means of policing activities. The police have become overly dependent on big data, blindly believing in it and ignoring its limitations, forming a "big data cult" and becoming overly superstitious about its power. At this stage, a rational attitude should be taken towards big data, rather than blind worship. To this end, the following two aspects can be governed: (1) not exaggerating the efficacy of big data and limiting the type and scope of cases to which big data can be applied in policing activities. In policing activities, the decision on whether to use big data to assist the police in handling cases is based on the actual types of cases. For cases where the use of big data is not appropriate or where traditional methods can solve the problem better, big data may not be used to handle the case. (2) Not to deliberately promote the process of big data in judicial activities. In policing activities, big data is only one of the indicators, and cannot replace the police in carrying out their job of preventing crime and fighting crime. The police's job of preventing crime and fighting crime should still be carried out by the individual police officer, i.e. the use of big data technology in judicial activities, but the responsibility for judicial activities should still be borne by the individual police officer.

5.4 Ethical Regulation of Big Data to Repair Relationships Between People

From Marx's theory of alienation, it can be concluded that both technology and other external objects should be evaluated by the "human being" as the evaluation system, and the ultimate measure should be the maximum freedom of the "human being" (Simmons, 2018). As the "oil" and "diamonds" of the new generation of the industrial revolution, Big Data technology should be used as a useful contribution to society while safeguarding its "human-centred" ethics and morality. The concept of "human-centredness". While Big Data is alienating human relationships, we must also actively repair them. This can be done in two ways.

5.4.1 Promoting the Human Dimension of Big Data Policing Activities

Crime is a normative value judgement that depends on human values, which vary with time and place (Završnik, 2021). The same act in different contexts may yield opposite results. The essence of a human being is a real-world being rather than an object, and cannot be simply objectified or data-driven, relying entirely on data for value judgements. The involvement of big data in policing activities has made it possible for the police to prevent and combat crime in a more rational and more visual and concrete way. However, this has led to the alienation of the relationship between the public authorities and the subjects of private rights, making the originally "human-centred" policing activities to be "data" centred, thus neglecting the spirit of humanism. The alienation of personal ethics by big data in policing activities is mainly due to the numerical analysis of data values while ignoring certain factors that need to be measured in terms of human values, such as making judgments based solely on big data analysis without considering the specific situation of the case. From a virtue ethics perspective, it is important to promote moral self-discipline and self-awareness among big data stakeholders. From an ethical perspective of science and technology, efforts must be made to achieve the unity of science and technology with humanism (Han & Chen, 2022). In response to this situation, the police can use a variety of tools in handling criminal cases, and can organically combine traditional methods of handling cases with big data, enhance humanistic care in the process of handling cases, and try to avoid overly mechanical obedience to big data.

5.4.2 Reinforcing Ethical Regimes and Weakening the Potential for Real-World Discrimination Against Data

In the age of big data, policing activities are invariably influenced by geographical, gender, ethnic, racial, religious and cultural biases in the traditional sense. Under the seemingly impartial and objective veneer of big data, policing activities that are subject to these biases can be even more shocking and infuriating to people. To avoid bias in the traditional world of big data to the greatest extent possible, the ethical system can be strengthened in the following ways to minimise the possibility of real-world discrimination being transformed into data-world discrimination.

Firstly, the prior ethical review should be strengthened to prevent the implantation of malicious algorithmic programs that can trigger alienation and discrimination between people. Secondly, designers of big data algorithms for policing activities should develop certain ethical codes of conduct. Establish detailed ethical rules for technicians designing big data software, programs and platforms dedicated to policing activities. In the design process to ensure that the big data system design is ethical and moral norms, there must not be unethical results appear. Again, establish ethical rules for big data within police agencies, set up self-restraint and regulation mechanisms for the system, and embed ethical and moral algorithms within big data algorithms to reduce the risk of alienating human relationships from big data for policing activities. Where possible, a big data ethics review committee can be set up within police agencies to supervise and control the ethical issues in the implementation of big data by police officers. Once again, a post-event complaint and error correction mechanism should be established. If Big Data is found to violate ethical norms in policing activities, the person concerned can immediately start the complaint procedure, and the police can also take the initiative to open a mechanism to correct mistakes to eliminate the ethical infringement of Big Data promptly subject to oversight by people organisations outside the policing system. Internal ethical oversight and regulation of police activities are not enough to ensure that the ethical system is effectively implemented; it should also be monitored and controlled by external forces. To this end, the police can make information about the use of big data in policing activities public so that external monitoring forces can effectively restrain it.

6. Conclusion

Big Data continues to shape current human society, with its invisible values guiding citizens and society alike. In the judicial field, the widespread use of big data technology has in some ways brought many benefits to some judicial officers. However, the widespread introduction of big data into the judicial field can also give rise to new problems that are not encountered in traditional societies. However, although big data has alienated society in the present, this alienation is also something that human society is bound to endure at a certain stage of development. Through the guidance of Marx's alienation theory, how we can avoid the negative effects of this theory to the greatest extent in social production and life practice is the most crucial. To better eliminate the negative effects brought about by the alienation of big data and guide big data to play a more positive role in the production and life of human society, four aspects of big data analysis results, analysis process, the nature of policing activities and ethical regulation of big data still need

The Government should continue to make efforts in these four areas.

Big data technology is quite fully and extensively used in China's policing activities and has made a greater contribution to the police in improving administrative efficiency and optimising police deployment, but big data technology has caused a greater impact on personal privacy and police functions themselves. China should set up better substantive and procedural norms in the process of Big Data involvement in judicial activities, and regulate the whole process of Big Data involvement in judicial practice in a more comprehensive manner. In addition, the involvement of big data technology in the process of judicial activities may also bring some impact on the inherent functions of the police, causing alienation of their inherent functions, which should also be taken into account when the police use big data technology to improve the efficiency of the grassroots police. In some cases, the application of big data technology does not bring the desired effect to the police at the grassroots level, and in some cases, it even hinders the efficiency and motivation of the police at the grassroots level. These differential impacts on police departments and different levels of police should also be noted. The discussion in this paper is based on observations and reflections on police practice in China. Some of the experiences may be common to all countries, such as the possible bias towards personal privacy and policing activities, while others are mainly specific to Chinese police practice. Some of the ideas presented in this article may not take into account the fact that other countries have not yet been able to do so. Some of the ideas in this paper may not take into account the specificities of police practice in other countries and will need to be examined and validated in subsequent studies. In any case, what is certain is that big data technology has profoundly influenced the law enforcement practices of police officers in various countries around the world and that a more objective and impartial attitude towards big data technology should be adopted in police law enforcement practices, rather than blindly believing or denying it. Both police departments and research scholars should think more comprehensively about big data and understand the impact of big data technology in policing activities from different perspectives.

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