

# *The Change of Judicial Power in China in the Era of Artificial Intelligence*

Weidong Ji\*

China Institute for Socio-Legal Studies, KoGuan School of Law, Shanghai Jiao Tong University

---

## **Abstract**

The singularity of artificial intelligence (AI), which transcends human intelligence to play the role of God, is imminent. In this context, the Chinese judicial system has gained some latecomer advantage, with the help of information technology, the Internet, big data, cloud computing, and AI to improve the efficiency and transparency of case handling. The trial process has undergone extensive and profound qualitative mutations. This represents a challenge to the institutional arrangements of the modern rule of law. At this stage, we should adopt a cautious and prudent attitude towards the design and application of legal-expert systems as well as machine learning. Especially from the aspect of computer sentencing, it is even more necessary to avoid a rush for quick results, and there is no need to completely exclude the judge's discretion and free evaluation of the evidence through inner conviction. The finality of the judicial power is destined to choose a correct final solution through a debate on the survival of the fittest mechanism. In the face of such a modern rule-of-law system, big data, cloud computing, information technology, and AI are just auxiliary means to achieve legal justice. It is impossible to put the cart before the horses. This is a basic principle that we should always bear in mind.

**Keywords:** artificial intelligence, judicial power, computerized judicial operation, legal reasoning, free evaluation of the evidence

## 1. SMART-DESIGN MOVEMENT AND NEW TRENDS OF CHINA'S JUDICIAL REFORM

On 17 September 2000, the Brazilian artist Eduardo Kac created the green fluorescent rabbit Alba with the help of French genetic engineering. This peculiar genetically modified organism has been marked as a breakthrough in the natural selection and evolutionary system that lasted for 4 billion years. Today, human beings can also rationally design their lives and the social structure is bound to change dramatically.<sup>1</sup> In short, with the “smart-design” movement that includes bioengineering, robotics engineering, and non-organic-life engineering, humans have begun to play the role of God.

A few years later, another series of exciting pieces of news came one after another. On 11 December 2015, three researchers announced that their jointly developed artificial

---

\* University Professor at Shanghai Jiao Tong University and President of the China Institute of Socio-Legal Studies. Correspondence to Weidong Ji. E-mail address: [jwldlaw@sjtu.edu.cn](mailto:jwldlaw@sjtu.edu.cn)

1. E.g. Robinson, Fernald, & Clayton (2008), pp. 896–900; Donaldson & Young (2008), pp. 900–4; see Harari & Lin (2014), chapter 20.

intelligence (AI) system has the flexibility of human cognition. The probabilistic program can distinguish between the essential and non-essential features of characters and can extract new concepts from a small number of cases.<sup>2</sup> On 15 March 2016, the AI program “AlphaGo” defeated the world champion Lee Sedol with a 4:1 record, causing a global sensation. On 19 October 2017, the major media reported that the “AlphaGo Zero” program had been developed by the company DeepMind, a subsidiary under the Google umbrella mastering self-learning and creativity. These facts have occurred one after another, which means that, as singularity is close, AI will surpass human intelligence to play the role of God.

From Alba to AlphaGo to AlphaGo Zero, only 17 years have passed. The digitalization and Internet-based social restructuring that started in the 1990s have achieved great improvements in only 30 years. During this period, the Chinese judicial system has gained some sort of latecomer advantage, using information technology, the Internet, big data, cloud computing, and AI to improve the efficiency and transparency of case handling, resulting in extensive and profound qualitative changes and mutations in the trial process. As a result, it must be acknowledged that the subject, standards, and procedures of ruling have presented an unprecedented scene: courtrooms seem like factories; the significance of the judge as a skilled judge operating on the line of operations is being strengthened by the weakening of the synergy and unity of the different roles of the public-prosecutor division. All these trends pose a serious challenge to the institutional arrangement of the modern rule of law and it is worthy of our careful research, analysis, and consideration. This article attempts to present some cold thinking about the social craze which exclaims that “robot judges are coming” and traces the initial intention and essence of judicial-system reform.

## 2. THE DEVELOPMENT OF AI AND A LEGAL DATABASE

Recalling the history of research on AI, big data, and law (especially the trial system), the West German Ministry of Justice established a design group that specialized in the role of computers in legal practice and operational mechanisms in the late 1960s. In 1973, a database and social-law search device called JURIS was constructed.<sup>3</sup> In the US, Bruce Buchanan and Thomas Headrick published an article about investigations into several issues in AI and legal reasoning<sup>4</sup> in November 1970, which opened up a study on how to conduct computer information on legal reasoning in case management.<sup>5</sup> Afterward, Walter Pope and Bernhard Schlink created JUDITH, a lawyer reasoning system that improves the quality and efficiency of legal services.<sup>6</sup> The University of Rutgers developed the world’s first computer legal-expert system in 1977—TAXMAN, which deals with corporate-taxation issues based on the LISP programming language and facilitates the precise and rapid processing of large amounts of transactional work.<sup>7</sup> In the same year, the Institute of Law of the former Soviet

2. Lake, Salakhutdinov, & Tenenbaum (2015), pp. 1332–8.

3. Gong & Li (1983), p. 16; see also e.g. Simitis (1967).

4. Buchanan & Headrick (1970), pp. 40–62.

5. Maggs & deBessonnet (1972), pp. 158–69; D’Amato (1977), pp. 1277–301; deBessonnet (1991).

6. Popp & Schlink (1975), pp. 303–14.

7. The representative discussion of the system designer himself includes McCarty (1977), pp. 837–93; McCarty (1980), pp. 23–43; McCarty (1983), pp. 265–94; see Matsumura (1986), pp. 24–35.

Academy of Sciences also launched a research project on automation management and related legal issues.<sup>8</sup> From the perspective of the socialist economic system, enhancing planning rationality through AI and monitoring the implementation of norms with precision seem to be the proper methods.<sup>9</sup> The researchers at the RAND Corporation's Civil Justice Center, D. A. Waterman and M. Peterson, developed the Legal Decision-making System (LDS).<sup>10</sup> The Imperial College of the University of London, UK, realized human-computer dialogue in the practice of nationality law with the help of the reasoning function of the programming language PROLOG. The reasoning function realizes a human-computer dialogue about nationality law.<sup>11</sup> At about the same time, Japan's Institute of Electronics Technology (now the Industrial Technology Research Institute) has also developed patents including substantive and procedural law and their interrelationships programmed in the KRP programming language.<sup>12</sup> In 2001, the US Supreme Court officially launched the Case Management and Electronic Archives System (CM/EAS).<sup>13</sup> According to the statistics, by the end of 2014, the system included more than 1 billion searchable litigation documents covering 13 federal appeal courts, 94 federal district courts, 90 federal bankruptcy courts, and several federal specialized courts, and has formed a vast judicial database.<sup>14</sup>

In China, the use of computer systems to establish a legal database, representative of the conception of auxiliary trial business, may be traced in the work of Gong Xiangrui and Li Keqiang published in the *Law Journal* 1983, "The Computerization of Legal Work." Perhaps the earliest relevant practice is the one I have seen at the Law Department of the Peking University Law School; some postgraduate students started a foreign-related legal-inquiry system in 1985 under extremely simple conditions. The evolutionary version of this query system is the well-known Chinese legal database of sentences and regulation called "Peking University Talisman" ([www.pkulaw.cn](http://www.pkulaw.cn)). I remember that its early slogan was "e law, 0 distance."<sup>15</sup> In 1986, the subject of the "Sentence Comprehensive Balance and Computer-Aided Sentencing Expert System" hosted by Shanghai legal scholars Zhu Huarong and Xiao Kaiquan was approved by the National Social Science "Seventh Five-Year" research project. In 1993, Professor Zhao Tingguang from Wuhan University Law School led the development of a practical criminal-law-expert system consisting of three parts: an auxiliary qualitative system of the consulting and retrieval system, an auxiliary sentencing system, and a function of retrieving legal standard information and reasoning and judgment on cases. The system has been adopted by more than 100 courts, procurators, and law firms.<sup>16</sup> As we all know, after the 1990s, the development of digital information

8. Gong & Li, *supra* note 3, p. 17.

9. But the famous legal economist Professor Xu Chenggang clearly pointed out at the 2nd Wild Hillside China Economic Forum that "using big data and artificial intelligence to build a planned economy will not work." See Xu (2017).

10. Waterman & Peterson (1981); Waterman & Peterson (1984), pp. 65–76; see also Waterman, Paul, & Peterson (1986), pp. 212–26.

11. See Matsuo (1986), pp. 51–8; Sergot et al. (1986), pp. 370–86.

12. See Niida (1987).

13. E.g. Zernik (2010), pp. 69–83; see Gao (2010), pp. 50–6; Yang (2011).

14. Roberts (2014).

15. The source of its thoughts can be seen in Zhang (1986). In recent years, Zhang Lixing established a "legal laboratory" for information retrieval and AI, and launched several kinds of legal-robot products.

16. See Hou (2007).

technology created the global “Cyberspace,” the large-scale “Netizen,” and “the e-People.” “International crimes on the Information Highway are increasingly active, and hacker-like anarchism continues to spread.”<sup>17</sup> In 1999, the Ministry of Public Security of China set up a computer-management and supervision department and deployed a large number of “cyberpolice”<sup>18</sup> patrolling electronic space, using electronic-information-detection systems to detect criminal acts and collect evidence. “E-Detective” is also quite effective.<sup>19</sup> The concepts of “network society” and “network law” also entered the field of mass media.

### 3. TECHNOLOGICAL INNOVATION OF COMPUTERIZED JUDICIAL OPERATIONS

The Internet and digital information technology also provide important leverage and opportunities for the innovation of China’s judicial methods and judicial-system reform. In general, the infrastructure construction of the traditional style of courts is time-consuming and laborious. It is necessary to install and manage a large number of laws and regulations, jurisprudence, and litigation files, and to expand office space and staffing accordingly, but computer systems and multimedia can help. The Chinese judicial institutions with relatively backward conditions have achieved a leap-forward development. The virtualizing administration of justice can also solve the specific problems of an insufficient number of qualified judges, insufficient judicial funds, and the spreading of judicial corruption with a low uniformity in the application of law. In my opinion, it is with these considerations that the “Five-Year Reform Outline of the People’s Court” promulgated by the Supreme People’s Court on 20 October 1999 took the use of information technology and the establishment of the online trial system as important parts of judicial reform.<sup>20</sup>

The first five-year plan of reform aimed, through using information technology, to strengthen the modernization of the court’s office and further improve the judicial efficiency and management level of courts, emphasizing that “the trial court should be equipped with security inspection, court text entry, recording and video-recording, projection, closed-circuit television monitoring system and other corresponding technical equipment.” This requires all levels of courts to “basically realize the computer and other modern technical means in the trial records, litigation documents, court personnel management, file management, statistical-data processing before the end of 2001” as well as the implementation of other aspects such as speeding up the computer information network and communication, construction, and unified network application software. It took three years to complete the computer network between the Supreme People’s Court and the high- and middle-level people’s courts, and strive towards establishing a national court computer network system. Case management, information, and statistical-data collection and transmission are included in the network system to improve the scientific and technological content of the various management work of the people’s courts. It also stipulates that:

---

17. Dearing (1999), pp. 4–5; Lessig (1999).

18. Liu & Platt (2000).

19. Ju (2000), p. 94.

20. See Ji (2001), pp. 222–35.

by the end of 2000, the Supreme People's Court will complete the reform of the judicial statistical indicator system for various cases. As well, explore the establishment of modern judicial statistics work and management that meets the needs of the People's Court for Trial Management and has rapid response and macro analysis capabilities systems.<sup>21</sup>

In 2002, the Supreme People's Court enacted the "Regulations on the Construction of the Computer Information Network System of the People's Court" and the "Plan for the Construction of the Computer Information Network System of the People's Court," convened at the National Conference on Information Construction of Courts, and launched the "National Judicial Trial Information System Project." These reforms laid the foundation for the large-scale use of big data, cloud computing, the Internet, information technology, and AI in the trial process.

It can be seen here that the Chinese Court Reform Program expects multimedia and digital information technology to play the following three main functions: (1) as a "tool for trial activities," to help judges and lawyers to obtain litigation materials and record the results of the inspection; (2) as a "device for court management," to save and transfer trial data, master the trial in a timely way, and produce court documents through audio and video recordings, etc.; and (3) as the window of "real-time observation" of the process of case handling, and judicial hearing being visualized and supervised by public opinion on live broadcast. To ensure that these functions are fully utilized, relevant courts at all levels have formulated relevant rules and regulations. For example, the Computer Network Management Rules of the Haidian District People's Court of Beijing (implemented in April 1998) stipulate that all courts must conduct various records and case counts simultaneously with the trial. The trial data input shall be uniformly managed by the Computer Unit of the technical room and quarterly surveys and spot checks of information quality shall be carried out at any time. For this reason, the judges' clerks and administrators are also tested for their information-processing skills and penalties are set for negligence.<sup>22</sup> In addition, the research and development of the computer legal-expert system and the judicial administrative-support system were also officially put on the agenda.<sup>23</sup> By 2003, the "China Trial Law Application Support System" had been promoted throughout the country. In 2004, the Supreme People's Court set up the first electronic and intelligent court. It is not difficult to imagine that, from the end of the 1990s, what the French social thinker Michel Foucault had thoroughly analyzed, the rational and precise power relations, the micro level of regulation, organization, efficiency, mechanized landscapes, and how to use computer systems and digital information technology as levers in China's courts at various levels, gradually unfolded and finally became a grand view.

#### 4. EXPERIMENTS AND ARGUMENTS AROUND COMPUTER SENTENCING

The most radical manifestation of the judicial AI was in 2006: the Shandong Province started to use a criminal-trial-expert system in the Zichuan District Court and in local courts

21. Research Office of the Supreme People's Court (2000), p. 69.

22. Beijing Haidian District People's Court (1998), pp. 203–6.

23. Lu & Shen (2000).

at all levels to implement computer sentencing. It became sensational news internationally. The main reaction of overseas legal professionals and the media at the time was that they were amazed at the extremely bold innovations of Chinese courts in trialling AI and had considerable fear of automated judgments using mouse clicks. Because criminal proceedings are related to human life, freedom, national goals, and social justice, compared with civil and commercial law, here it is more necessary to retain personal evidence and the scope of influence. More importantly, it is necessary to strengthen the comprehensive understanding and detailed insight into the specific factual relations and contexts, and these elements are more difficult in cases carried out by mechanized technology.<sup>24</sup>

From the view point of Chinese legal traditional culture, we can find that the basic characteristic of the legal system lies in the absolute legal sanction of the serious case and the mechanized and detailed provisions of the judicial discretion. I pointed this out in 1993 when I published an extended paper on “The Meaning of Legal Proceedings” and I have stated the following critical observations:

All generations of criminal laws were set in the same way, almost ruling out the scope of sentencing. Unfortunately, electronic computers had not been invented at that time. Otherwise, the expert system software of automatic sentencing might have been designed by our ancestors . . . . To prevent and limit the arbitrariness, China has adopted more stringent measures than the West. Its motives may be understandable, but its effects are terrible because our country represses choice as well as its willfulness, which is the value of the [legal] process.<sup>25</sup>

I did not expect that, some ten years later, or even earlier, someone would use the tools of the information-technology era to fill the regrets of the past. The software for automatic sentencing and the time between the elements and the effects are some choices that have been added to the situation. Therefore, it is not surprising that, in China, computer punishment is easy to be accepted and quickly popularized because it is based on the precondition and catalyst of the inherent way of thinking.

There is also an evident direct cause, which is that the quality of handling cases in judicial activities is quite variable: the abuse of discretion, judicial corruption, miscarriage, and even the “yin and yang sentence” of two conclusions<sup>26</sup> that have greatly shaken public confidence in the judiciary. It also encourages the objectivity, neutrality, and certainty of computer sentencing. So, the judges and the parties are trying to use the light of science and technology to illuminate the black box that allows discretion and informal operation, and use computers to guarantee the fairness, efficiency, and precision of the trial. From the introduction of the “Rules for the Implementation of Standardized Sentencing for Hundreds of Common Crimes” compiled by the Zichuan District Court, it is possible to find the reciprocal effect between Montesquieu’s standard image of a judge like a vending machine and the traditional way of thinking that sentences are automatically given in accordance with the provisions of

24. For details, see Ji (2006); Ji (2007). The reason for the incident is that the “Beijing News” published a message on 23 May 2004 that caused concern and controversy in China; see Beijing News (2004). The general situation at that time can be found in the report in Legal Daily (2004). Computer sentencing is once again eye-catching because of the report of Legal Daily (2006). The Suichuan court explores the standardization of criminal-trial sentencing. There are many related introductions and discussions in China, such as Democracy and Legal Times (2006); Southern Metropolis Daily (2006). For the reaction of international public opinion, see Haines (2006); Tech Republic (2006); IT Media News (Japan) (2006); Amazing News (Japan) (2006).

25. Ji (1993), pp. 97–8.

26. For a typical example of the coexistence of true and false judgments, see Xinhua News (2006).

the articles. Here, it may also be concluded that a judicial-mirror principle of judgment strictly corresponds to the same case of law. If you think at the level one more deeper layer, there has also been a change in the understanding of the nature of a trial by trying to replace the common language with a professional common language (to compare facts and conduct rigorous arguments according to legal requirements), as much as possible to exclude the effects of emotional factors and ambiguous connotations on inference. The promotion of computer sentencing in Shandong courts has produced the intention and objective effect of making legal jargon more standardized with the help of computer language. For example, Zichuan District Court President Wang Jiandong said that the rural, mountainous region of a judge's professional quality is generally low, the discretion is often abused, and, under such conditions, the use of sentencing software to handle cases ("In essence, people are constrained by institutions"<sup>27</sup>) will keep the trial more in line with the unified professional standards. In such a sense, the effort is certainly worthy of a full evaluation.

Nevertheless, we should adopt a cautious attitude towards the design and application of legal-expert-system software, especially from the aspect of computer sentencing, and it is also not necessary to completely exclude the judge's mind and discretion. To ask why, the answer is: first, any legal-expert-system software makes a pure legal-positivism presupposition. The computer deals with the syllogism reasoning in the content of the legal text and the conditional reasoning of "requirement-effect." It can also deal with the similarity between the case characteristics and the basic case features retrieved by the database and make propensity reasoning and judgment.<sup>28</sup> However, it is impossible to properly represent the meta-rules that determine the order of the pros and cons of effective specification. Computer sentencing can largely exclude subjective arbitrariness in exercising discretion, but it also excludes speculations including natural law, the protection of rights, natural and human nature, and some critical factors such as teaching less and focusing more on prevention; it also tends to exclude policy-adjustment mechanisms such as interest considerations. Second, the standardization embodied in computer sentencing is bound to ignore local knowledge, context, specific situations, and the "webs of significance" as key elements for legal judgment. To some extent, it may be argued that tacit knowledge indicates the boundaries or limitations of computer legal-expert-system and AI trials.

Moreover, Chinese statutes have always been marked by simple slogans and there is no shortage of space for interpretation; the connotation and extension of each concept have not yet been completely unified. For example, only the obligation clause has different expressions such as "should" and "must." The principle of fair liability with Chinese characteristics and the often-used terms such as "reasonable" and "predictable" play an extremely important role in legal reasoning, but the relevant matters are not given in the legal provisions and do not have a clear definition. Administrative and local norms are extremely complex and there are often contradictions between different levels and departmental regulations, making integration work extremely difficult. All these realities are suitable for computer processing. Conversely, if the dialogue and communication between the inside and outside of the court are formatted and fixed through the machine in such a state, it is likely to hinder the development and improvement of legal hermeneutics, reasoning techniques, professional education, and the

27. Southern Metropolis Daily, *supra* note 24.

28. Prentzas & Hatzilygeroudis (2007), pp. 97–122; Kumar, Singh, & Sanyal (2009), pp. 65–71.

ethical attitude of the judge, making the justice flow a simple intellectual game of retrieval and speculation. If such primary system software is only used to support trials and to reduce the search burden and avoid omissions to a limited extent, it is not only unobjectionable, but also strongly supported. But, once the judges are required to form a judgment based on this, and even automatically generate judgments, it will inevitably lead to endless trouble.

It is also necessary to point out that the current database of legal knowledge in China is incomplete.<sup>29</sup> The core of computer sentencing is the legal-reasoning system and the accumulation of research results on legal reasoning is extremely weak in China. Under such circumstances, if the simple method of formalizing the relevant provisions and adding several explanatory rules is adopted, then, when the software is executed, it would be easy to appear as if the knowledge itself does not circulate, but the program falls into a useless loop. It is also difficult to properly handle negative performance. If the vocabulary reserves are not enough, the combination of the legal-knowledge database and the inference engine can easily lead to meaningless searches. If there are multiple legal-knowledge databases, how to make them compatible with each other and to eliminate the integration of contradictions and conflicts and effective consistent control is also a difficult and important topic, which requires significant time and effort to achieve progress. Moreover, the law is constantly being revised, and updating the knowledge database and adjustment of the interpretation rules also need to be carried out. In the network structure, if the redefinition of a certain item is neglected, it is possible to multiply the error and cause the automated processing to be abnormal. This will also lead to high costs for the construction and maintenance of legal-expert systems.

It would be a mistake to try to use “the US Federal Sentencing Guide” as a defence for mechanized trials. The nature of “the Federal Sentencing Guide” is closer to a technical manual on how to exercise discretion. On the one hand, the informal “quote” of past sanctions within the court and the ambiguous judgment were previously clearly defined as far as possible. It is stipulated in the guide, on the other hand, that many standards of policy adjustment have been established for the precision and flexibility of the judiciary (e.g. the principle of giving priority to the relief of victims and the various elements of the aggravation or mitigation of sanctions against corporate crimes).<sup>30</sup> It is particularly worthy of attention that this judicial technical-operation rule has obvious moral orientation, human rights philosophy, and policy thinking, and is subject to constitutional review.<sup>31</sup> In China, a more similar phenomenon is the judicial interpretation of the Supreme Court’s specific criteria for determining the magnitude of sentencing and calculating the amount of compensation, as well as the Guidelines of Sentences recently tried by some courts. There is not much substantive connection with the computer automated-processing-software system. Since the purpose of computer sentencing is to pursue precise trials, then the expert system software itself must be able to withstand sophisticated trials and judges must have the quality to avoid human

---

29. This issue is also plagued by legally developed countries. For the weak foundations of similar expert systems, the challenges of software development, and the various efforts and specific solutions to overcome barriers, see Thomasset (1989); see also Natsui (1993), Part 3, chapter 3; Yoshino (2000), especially chapters V, VI.

30. For the ins and outs of the US Federal Sentencing Guidelines, the basics, and recent controversies and amendments, see US Sentencing Commission website (<https://www.ussc.gov/guidelines> (accessed 20 September 2006)).

31. Documents can be referred to, e.g. Gebler, and also the Ethics and Policy Integration Centre (2003), as well as Democracy Now (2005).



mistakes such as misleading the mouse or the fat-finger problem. This is a conclusion that can be inferred without a computer.

## 5. LITIGATION-INFORMATION SYSTEMS AND WISDOM COURTS

With computer sentencing at different levels of the trial, aided information systems are also developing. From 2007 to 2017, Chinese courts at all levels were rapidly entering the information age. In 2007, the Supreme People's Court published the "Decision on Comprehensively Strengthening the Informationization Work of the People's Courts," followed by the formulation and issuance of the "Code for the Construction of the Information Court of the People's Court Trial Court (Trial)." On the basis of summing up the practical experience, the Supreme People's Court issued the "Basic Requirements for the Informationization of the Trial Court of the People's Court" in 2011 and promulgated the "Several Opinions on Promoting the Construction of the Three Platforms for Judicial Openness" in 2013 and the fourth judicial administration in the country. For the first time, the concept of "big data, big pattern, big service" was put forward. On 1 August 2014, the Supreme People's Court opened the China Trial Process Information Open Network and a litigation-service network at the end of the year. At the end of December 2015, the lawyers service network platform was opened. Since 2015, the informationization process has accelerated again. The Five-Year Development Plan for People's Courts' Informatization Construction (2016–20) and the Five-Year Development Plan for the Informationization of the Supreme People's Court (2016–20) were simultaneously released. Soon, the Judicial Big Data Co., Ltd. was formally established and the "Faxin—China Legal Application Digital Network Service Platform" was officially launched. In July of the same year, the Supreme People's Court first proposed the concept of a "smart court;" one year later, the construction of a "smart court" was included in the outline of the national informationization-development strategy. At the Third World Internet Conference, the Supreme People's Court took the lead in organizing the "Wisdom Court and Network Rule of Law Forum" and issued the "Wuzhen Consensus" on judicial informatization, intelligence, and networking.

The "wisdom court" is a concept with multiple meanings and it should not be simplified as an "AI trial." For example, the Shanghai No. 2 Intermediate People's Court launched the "C2J Judge Intelligent Aid Case Handling System" in 2012. It has 35 subsystems including trial-work support, judgment-document analysis, and mobile-terminal case-handling APP (application software), involving case submission, remote trial, cross-border forensics, and many other functions including collaborative execution. The Shanghai Higher People's Court established the "Shanghai High People's Court Big Data Information System" consisting of portal websites (intranet, extranet), a central database, six information-application systems, 133 application software items, and a computer- and multimedia-system infrastructure. It implemented the concept of network three-level linkage, application comprehensive coverage, data generation, high information aggregation, and full resource sharing, and established a 12,368-litigation phone-service platform to provide various pieces of information to parties, lawyers, and the public.<sup>32</sup> In the same year, the Zhejiang Higher People's Court launched the information-management system

32. SHPC (2017), pp. 57–8.

of the People's Court of the province. In 2014, the Jiangsu Higher People's Court established the litigation-service network "Jiangsu Legal Cloud," which not only provided information services in litigation, trial, and judicial administration, but also visualized the judgment-execution process. At the end of 2016, the Beijing High Court launched the "Intelligence Judge" system, known as the "robot judge."<sup>33</sup> Affected by developments such as "AlphaGo" and "AlphaGo Zero," the speech bubble around "robot judges" and "robot lawyers" is also expanding. Some local courts have begun to vigorously promote such decisions as the automatic generation of sentences by AI. There are also innovative measures such as correcting the errors of judges based on big data.

At the beginning of June 2017, the Central Political and Legal Committee organized more than a dozen experts and scholars to visit Shanghai, Nanjing, and Guiyang to investigate the results of the pilot reform of the judicial system. The focus of the experience of local and various agencies has inadvertently shifted from judicial-system innovation to judicial-technological innovation. Wisdom courts, data courts, litigation services with integrated information systems, electronic cross-examination, cloud cabinet interconnection of case files, intelligent voice court proceedings, discretion data cages, robot lawyers, buzzwords, new concepts, and avant-garde phenomena have come out one after the other. These new improvements have left people both excited and worried about the risks and hidden dangers. In any case, courts at all levels are becoming like a judgment workshop and judges are working mechanically as if in an assembly line. On many occasions, the trial has become the result of a joint decision between the judge and the computer engineer. The automatic generation mechanism of the judgment can easily lead to the data algorithm governing the judicial realm. In short, the trial space is undergoing radical reforms, which are vigorous and will inevitably affect the design of various legal mechanisms and the field of legal education in the future. We cannot but carefully observe, analyze, and comprehensively evaluate the two aspects. The various ripple effects of the "Internet+" and "Artificial Intelligence+" in the trial space take precautionary measures from the system and from the mind.

## 6. COLD THOUGHTS ON JUDICIAL AI FEVER

In recent years, with the transformation of social structure and the enhancement of citizens' rights awareness, the scale of cases accepted by Chinese courts has grown at a double-digit rate yearly as a lawsuit explosion. As a result, the cases handled by judges have risen sharply and remain high. The judicial authorities have actively adopted new information technologies like the Internet, big data, cloud computing, and AI to improve judicial efficiency. From Shanghai to Guizhou, the local courts have alleviated the backlog of cases through the simplification and diversion of cases, the verification of the maximum number of cases handled by judges per year, the strengthening of assessment accountability, and the adjustment of the proportion of judges and trial-support personnel. The slogan is "efficiency."<sup>34</sup> It is indeed effective to reduce the load of mechanical labour and improve the speed and quality of materials and data processing through computer information-retrieval systems and other auxiliary means. In this sense, the

33. Liu (2016).

34. For details, see Cui (2017), pp. 1–9.

construction of the “wisdom court” has an important value and it is promising. However, if we go further and let AI exceed the scope of auxiliary means and apply it comprehensively to trial cases, and even largely replace judges’ judgments, it is very likely that the judicial power will go astray because, in cases where the facts are difficult, interpersonal relationships are complex, and human and emotional factors are involved, judging according to legal principles, common sense, and insights, and properly handling them are subtle arts. Even if AI is embedded into probabilistic procedures and has deep-learning ability, it is difficult to make a fair and reasonable, stable, and convincing case judgment.<sup>35</sup>

More importantly, excessive expectation or misunderstanding of AI may lead to the collapse of the system design of the modern rule of law, causing contradictions, confusion, and even a social structure that is out of control. In the modern state-governance system, the court is the calibrator of the relationship between government power and individual rights, and is key to the formation and maintenance of order. To ensure the impartiality and authority of the judiciary, judges are given the privilege of certain preferences in the system—obeying the law only to prevent any external interference, ensuring accountability; the final power given to the application of law and legal judgment; occupational security, including exemption, is provided on the premise of procedural justice. The reason for the legitimacy of such identity privilege is that the judge’s selection of criteria is strict enough to ensure the legitimacy of their knowledge and character; the trial process is open, transparent, and fair, and can prevent unprincipled compromises and black-box operation; any decision must go through the baptism of confrontational debates and proofs, often taking the third-instance final review, based on legal reasoning and full consideration. It is for these reasons that the final judgment is also the best time to settle any dispute. Obviously, after the trial space is reformed in an unrestrained “artificial intelligence+” way, such a judge’s position will inevitably be greatly shaken, and it may cause a comprehensive deconstruction of the judicial system and even judicial power.

Letting AI automatically generate judgments to correct deviations in accordance with the law of big-data correction will inevitably form a dual structure of the trial subject and even lead to the pluralization of the decision-makers. In fact, there will be a situation in which the data-processing company of the software and the judge jointly make decisions. Once the judge and the software jointly function, the power boundary becomes blurred and the judicial accountability system can easily lose its strength. There is at least the possibility of shirking responsibility by the judge by the machine taking more influence in the decision of the ruling. In addition, if the wisdom court’s idea flows to one-sided and extreme, and popularizes the mechanism for computers to automatically generate judgments, it will inevitably overthrow the ruling process inside the trial. Of course, the computer-generated sentence is only a reference text that the judge also needs to review and correct but, under the double pressure of the cases accepted and the rigid period of the statutory trial period, plus

---

35. On the evening of 15 October 2017, I was invited to give a speech and discussion at Shanghai Jiao Tong University Alumni Association at Microsoft Headquarters in Seattle. I discussed AI and justice with digital-information-technology experts, legal consultants, and lawyers of the company and other multinational corporations. The relationship in which everyone believes that the use of big data, search technology, and AI to develop a trial-assistance system to reduce the burden of transactional work is promising, but the automatic generation of robot judges and judgments is impossible in the foreseeable future, because the judiciary and the judgment must not only understand the laws and facts of the requirements, but also understand people’s minds. It must have a profound and comprehensive understanding and insight into the context, and resolve the disputes and consider the corresponding relationship between the ripped peripheral relations.

the inertia of the person, the judge may rely heavily on the reference judgment sooner or later. Once such a situation is a commonplace, algorithmic dictatorship cannot be avoided. Big data will also make mistakes, such as quality problems and deviations in existing judgments unintentionally fixed, suppressing the dynamic mechanism of discovering legal rights, innovation norms, and promoting institutional evolution through cases. More importantly, big data and AI will become the “guillotine” of the court debate, resulting in an atmosphere that “all depends on established software, (and) face-to-face dialogue arguments are nothing,” making China inherently weak. Legal reasoning, legal discussion, and legal interpretation will become less important. This means a fundamental change in the structure and function of the modern judicial process so that judges are losing the institutional and technical guarantees of “doing at will without breaking rules” in free evaluation of the evidence.

Legal data with diversified sources and expanding scales could not be perfect. Moreover, there are still serious quality problems in the process of rapid development in China and there are even problems of data fraud based on performance considerations.<sup>36</sup> Under such circumstances, computer algorithms constitute a black box. If there is one-sided overemphasis on the application of big data and AI in the judiciary, it is easy to make the algorithm and inference inherit the drawbacks and prejudices of the original judicial practice, and some defects will even be magnified. If the inadvertent judicial system is dominated by the algorithmic theory, then legal justice will inevitably be kidnapped by the algorithm and kidnapped by the data processor. To prevent such bleak prospects, it is necessary to use the opportunity of the court’s organization law and the revision of the judges’ law to clearly define the main body of the trial mechanism. Judging from the current draft revision of the law and the content of the discussion, the changes in the era of “Internet+” and “artificial intelligence+” have not been reflected in the legislative process in a timely and sufficient manner. For example, the organization law of the court does not clearly stipulate the rights and obligations of judicial assistants, which is incompatible with the current changes in the trial; the data-processing department and computer engineers are having a profound impact on the trial of the case, and the court’s information-processing outsourcing business is huge. These new phenomena are subject to further clear definition by law. In addition, in the face of laws and computer-program coding, and the control of big-data algorithms, the principle of “consideration of thinking” should be emphasized and give sufficient space for judges to comprehensively name and make decisions. Furthermore, how is the automatically generated technology compatible with legal interpretation and legal communication, and how will AI be prevented from compressing the space for legal discussion? How can it be ensured that the three elements of the procedure, debate, and consensus in the era of AI are not only maintained, but also further strengthened? How can a new solid foundation for the legal profession be provided? These issues must be seriously considered.

---

36. According to the results of the 2015 survey conducted by Shanghai First Intermediate People’s Court, 43% of the judges believed that the information collection of the case was not targeted and the degree of adaptation to new law was not enough; 50% of the judges believed that the information points were set too much. For some, there is no post-application for information-point entry. More importantly, there is a lack of uniform standards for the collection and configuration of various pieces of information. The phenomenon of “information islanding” is serious and restricts the intelligent application of judicial big data. In addition, 61.59% of the judges believed that “the accuracy of case information entry is not enough, and the key information lacks the automatic verification function.” For details, please refer to the research report of the research group RR (2017).

In the new social context, in judging judicial responsibility and judicial democracy, the two major problems that the system design must face are how to prevent the burden of judges from being too heavy and how to prevent judges from trying to shirk their responsibility. China's solution to the problem of the heavy burden of responsibility is mainly to develop the means of dispute settlement outside the court or the direct democratization of the judicial system and to improve the efficiency and decentralization of responsibility by means of information technology. It is easy to form a channel for shirking responsibility and transferring responsibility under the condition that the subject of the trial is diversified and the trial standards are diversified. The computer software system can ensure the whole process being left in the mark and it may be able to alleviate similar problems to some extent. However, the practice of data cages and the automatic generation of judgments can easily lead to the situation of algorithms governing the trial, making the judges incapable of being responsible, and it is difficult to carry out real and effective accountability for the results of the judges handling the case. Once the situation of algorithmic autocracy is formed, the meaning of court debate, appeal review, and expert discretion will be relative. The result will lead to the objectification of judges, the weakening of judicial authority, the deconstruction of the trial system, and even complete legal nihilism.

In general, the main functions of the legal system are to form order, resolve disputes, provide clear expectations, and justify the value. The key to the modernization of the so-called national governance system and governance capacity lies in the concept of legality, the regulation of the operation of public power, and the cultivation of the behaviour and mode of thinking of the government and all people in observing legal rules. To this end, the legal system, especially the trial system, must have sufficient rationality and neutrality to improve the efficiency and fairness of the entire society. Law enforcers and judicial people have always faced various conflicts of interest and value. To effectively resolve conflicts, legal reasoning and legal arguments must abandon the attitude of self-respect, must be good at listening to different opinions and arguments, and must make decisions that are universally convincing, so as both sides accept and agree. Such fundamental characteristics determine the position of legal research and the purpose of legal education. For the legal-decision process, no matter which viewpoint can be raised in an equal and open program arena, it is necessary to experience the baptism of persuasive competition. In other words, the essence of the rule of law is to convince people, not to force people. The neutrality of judicial power is bound to adopt an inclusive attitude towards different interests and value judgments. The finality of judicial power is destined to choose a correct final solution through debate on the survival of the fittest mechanism. These programs must meet at least two criteria: first, they must be completely self-consistent in logic and should never contradict each other; second, they must reflect the maximum common divisor of society in value judgment and have the maximum general persuasion. In the face of such a modern legal system, AI, big data, cloud computing, and information technology are just auxiliary means to achieve legal justice.

## REFERENCES

- Amazing News (Japan) (2006) "China Introduces Computer Sentencing Software to Trial," 15 September.
- Beijing Haidian District People's Court (1998) *Regulations and Institutions*, Beijing: Haidian District People's Court Research Office.

- Beijing News (2004) "Entering A Criminal Plot Computer to Make A Sentence," 23 May.
- Buchanan, Bruce G., & Thomas E. Headrick (1970) "Some Speculation about Artificial Intelligence and Legal Reasoning." 23 *Stanford Law Review* 40–62.
- Cui, Yadong (2017) "Exploration of the Judge's Annual Maximum Case Handling Calculation and the Solution of the Contradiction of 'Thousands of People with Less Cases'." 1 *Judicial Decision-Making and Reference* 1–9.
- D'Amato, Anthony (1977) "Can/Should Computers Replace Judges?" 11 *Georgia Law Review* 1277–301.
- Dearing, Mark C. (1999) "Personal Jurisdiction and the Internet: Can the Traditional Principles and Landmark Cases Guide the Legal System into the 21<sup>st</sup> Century?" 4 *Journal of Technology Law & Policy* 4–5.
- deBessonnet, Cary G. (1991) *A Many-Valued Approach to Deduction and Reasoning for Artificial Intelligence*, Boston: Kluwer Academic Publishers.
- Democracy and Legal Times (2006) "Computer Sentencing Challenges Discretion," 9 September.
- Democracy Now (2005) "Supreme Court Overturns Federal Sentencing Guidelines," 14 January.
- Donaldson, Zoe R., & Larry J. Young (2008) "Oxytocin, Vasopressin, and the Neurogenetics of Sociality." 322 *Science* 900–4.
- Ethics and Policy Integration Centre (2003) "The Relationship between Law and Ethics, the Significance of the Federal Sentencing Guidelines for Organizations," 2 May.
- Gao, Yifei (2010) "On the New Development of American Trial Disclosure in the Digital Age and Its Enlightenment to China." 10 *Academic Forum* 50–6.
- Gebler, David (2004) "How Changes to Federal Sentencing Guidelines Will Affect Ethics and Compliance Programs," <http://accounting.smartpros.com/x44059.xml> (accessed 16 October 2019).
- Gong, Xiangrui, & Keqiang Li (1983) "Computerization of Legal Work." 3 *Journal of Law* 16–20.
- Haines, Lester (2006) "Chinese Court Deploys Sentencing Software: Computer Says 10 Years, comrade," *The Register*, 13 September.
- Harari, Y. Noah, & Junhong Lin (2014) *Sapiens: A Brief History of Humankind (Chinese Edition)*, Beijing: CITIC Publishing House.
- Hou, Zhaoxiao (2007) "The Dream of Computerized Sentencing: Prof. Zhao Tingguang and His Computer System of Sentencing." 23 *Democracy and Legal System* 4–8.
- IT Media News (Japan) (2006) "Computer Courts Are Active in China," 14 September.
- Ji, Weidong (1993) "The Significance of Legal Procedures." 1 *Chinese Social Sciences* 83–103.
- Ji, Weidong (2001) "The Digital Age and Re-Construction of the Legal Network: The Role of Information Technology in China's Judicial Reform." 54 *Sociology of Law (Professional Journal of the Japanese Association of Sociological of Law)* 222–35.
- Ji, Weidong (2006) "Computer Sentencing Is Right and Wrong," *Southern Weekly*, 25 September.
- Ji, Weidong (2007) "Computer Disciplinary Dialectical View." 1 *Political and Legal Forum* 124–8.
- Ju, Xuewu (2000) "Criminal Crime on the Internet and Its Containment." 4 *Legal Studies* 83–100.
- Kumar, K. Ashwin, Yashwardhan Singh, & Sudip Sanyal (2009) "Hybrid Approach Using Case-Based Reasoning and Rule-Based Reasoning for Domain Independent Clinical Decision Support in ICU." 36 *Expert Systems with Applications* 65–71.
- Lake, M. Brenden, Ruslan Salakhutdinov, & Joshua B. Tenenbaum (2015) "Human-Level Concept Learning through Probabilistic Program Induction." 350 *Science* 1332–8.
- Legal Daily (2004) "Computer Sentencing Controversy in Advance," 13 September.
- Legal Daily (2006) "Can Computer Sentencing Avoid Different Criminal Cases?" 2 August.
- Lessig, Lawrence (1999) *Code and Other Laws of Cyberspace*, New York: Basic Books.
- Liu, Guojun, & Hongqing Shen (2000) "Strengthening the Construction and Development of the Court's Computer Information Network," *People's Court Newspaper*, 27 December.
- Liu, M., & K. Platt (2000) "China's e-Rebels," *Newsweek*, 1 October.
- Liu, Ziyang (2016) "Robot Judge 'Xiao Rui' Background Automatically Filed," *Legal Daily*, 14 December.

- Maggs, Peter B., & Cary G. deBessonnet (1972) "Automated Logical Analysis of Systems of Legal Rules." 12 *JURIMETRICS Journal* 158–69.
- Matsumura, Yoshiyuki (1986) "Introduction," in H. Yoshino, ed., *The Foundation of the Legal Expert System*, Tokyo: Gyosei Publishing House, 24–35.
- Matsuo, Hiroshi (1986) "Logical Programming of the British Nationality Law," in Hajime Yoshino, ed., *The Foundation of the Legal Expert System*, Tokyo: Gyosei Publishing House, 51–8.
- McCarty, L. Thorne (1977) "Reflections on TAXMAN: An Experiment in Artificial Intelligence and Legal Reasoning." 90 *Harvard Law Review* 837–93.
- McCarty, L. Thorne (1980) "The TAXMAN Project: Towards a Cognitive Theory of Legal Argument," in B. Niblett, ed., *Computer Science and Law: An Advanced Course*, Cambridge: Cambridge University Press, 23–43.
- McCarty, L. Thorne (1983) "Intelligent Legal Information Systems: Problems and Prospects." 9 *Rutgers Computer and Technology Law Journal* 265–94.
- Natsui, Takato (1993) *Trial Practice and Electronic Computer-Coordination of Law and Technology*, Tokyo: Nippon Hyoron Sha Press.
- Niida, Katsumi (1987) "Patent Law Consultation System." 5 *Law and Electronic Computer* 115–24.
- Popp, Walter G., & Bernhard Schlink (1975) "Judith: A Computer Program to Advise Lawyers in Reasoning a Case." 15 *JURIMETRICS Journal* 303–14.
- Prentzas, Jim, & Ioannis Hatzilygeroudis (2007) "Categorizing Approaches Combining Rule-Based and Case-Based Reasoning." 24 *Expert Systems* 97–122.
- Research Office of the Supreme People's Court (2000) *The Five-Year Reform Outline of the People's Court*, Beijing: People's Court Press.
- Roberts, John (2014) "Chief Justice's 2014 Year-End Reports on the Federal Judiciary," <https://www.supremecourt.gov/publicinfo/year-end/year-endreports.aspx> (accessed 10 October 2019).
- Robinson, Gene E., Russell D. Fernald, & David F. Clayton (2008) "Genes and Social Behavior." 322 *Science* 896–900.
- RR (2017) "Strengthening the Development of Case Information Resources and Promoting the Intelligent Application of Judicial Data." 8 *Judicial Decision-making and Reference* 1ff.
- Sergot, M. J., F. Sadri, R. A. Kowalski et al. (1986) "The British Nationality Act as a Logic Program." 29 *Communications of the ACM* 370–86.
- SHPC (2017) "Exploration and Practice of the Reform of the Judicial System of the Shanghai Court (2014–17)," Report, Shanghai Higher People's Court.
- Simitis, Spiros (1967) *Automation in der Rechtsordnung—Möglichkeiten und Grenzen*, Karlsruhe: Verlag Müller.
- Southern Metropolis Daily (2006) "Shandong Promotes Computer Sentencing in Disputes Is Expected to Be Accurate to the Day," 12 September.
- Tech Republic (2006) "Order in the Database! The Software Says, 'Go to Jail!'," 13 September.
- Thomasset, Claude (1989) "Expert Systems in Law and the Presentation of Legal Knowledge: Can We Isolate It from the Why and the Who?" in A. A. Martino, ed., *Proceedings of the 3rd International Congress on Logica, Informatica, Dritto*, Consiglio Nazionale delle Ricerche, 1–20.
- Waterman, Donald A., & Mark A. Peterson (1981) *Models of Legal Decision Making*, Santa Monica, CA: Rand Corporation.
- Waterman, Donald A., & Mark A. Peterson (1984) "Evaluating Civil Claims: An Expert Systems Approach." 1 *Expert Systems* 65–76.
- Waterman, Donald A., Jody Paul, & Mark Peterson (1986) "Expert Systems for Legal Decision Making." 3 *Expert Systems* 212–26.
- Xinhua News (2006) "Yin and Yang Verdict," 14 September.
- Xu, Chenggang (2017) "Why AI Can Never Completely Replace Human Beings," *Pengpai News*, 23 September.
- Yang, Weibo (2011) "On the US E-Filing Online and Its Enlightenment." 1 *Cyber Law Commentary* 137–47.

- Yoshino, Hajime, ed. (2000) *Legal Artificial Intelligence—Analysis and Law of Legal Knowledge the Realization of Legal Reasoning*, Tokyo: Nihon Sousei Sha Press.
- Zernik, Joseph (2010) “Data Mining of Online Judicial Records of the Networked US Federal Courts.” 1 *International Journal on Social Media: Monitoring, Measurement* 69–83.
- Zhang, Lixing (1986) “The Impact of the Computer Revolution on the Legal Circle.” 3 *Journal of Peking University (Philosophy and Social Sciences)* 81–5.