Chapter 8

The Past, Present and Future of Technology on Sentencing in Taiwan: Some Constitutional Reflections

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A. BACKGROUND

Sentencing is a complex decision in which judges must consider factors in multi-dimensions. In Taiwan, the turn to the application of technology in sentencing commenced with the White Rose movement in 2011, the large-scale public movement triggered by a judgment that pronounced three-years-and-two-months' imprisonment, whereas the prosecutor had asked for seven-years-and-ten-months' imprisonment for a person who was convicted of sexually assaulting a six-year-old girl.[1] Such considerable discrepancy between the requested and handed down sentencing invoked the public's questioning whether sentencing decisions were consistent, transparent and reasonable. Responding to the public's call for reform, the highest administration – the Judicial Yuan – committed to the public that it would endeavour to enhance the transparency and consistency of sentencing decisions.[2] However, sentencing decisions pertain to the discretion enjoyed by judges, who are obliged only to follow the law,[3] especially not any orders from the government and the judicial administration. To carry out the judicial administration's commitment without jeopardising judicial independence, the Judicial Yuan began the procurement of a series of tools, with different levels of reliance on technology, to enhance the transparency of sentencing.

This chapter introduces three generations of the above-mentioned tools, their methodologies, and their practice (see 'B. The Past, Present and Future'). To assess the constitutional implications contextually, it also introduces two changes in the law – the Constitutional Court Procedure Act and the Citizen Judges regime, which entered into force respectively in 2022 and 2023 – and their relevance to the application of sentencing technologies (see 'C. Sentencing Legal Techs amid Changes'). Finally, it analyses the accompanying constitutional issues amid changes (see 'D. Constitutional Issues').

B. THE PAST, PRESENT AND FUTURE – PROCUREMENT AND PRACTICE THROUGHOUT THREE GENERATIONS

The procurement of the sentencing tool commenced right after the White Rose movement. The first generation of sentencing tools emerged in 2012 and was publicised in 2016. Whilst still online and accessible to all, the maintenance of its data stopped in 2019. The procurement and open timeline of the second-generation tool overlapped with the first-generation one. The second-generation tool was publicised in 2018 and is still online and accessible.[4] The third-generation tool has been online since February 2023.[5] It is now exclusive to the judiciary. Nevertheless, considering the publicising trajectory of its predecessors, it is likely to be open to all in the future.

I. First generation (the sentencing database)

(a) Motivation for procurement

The motivation for procuring a sentencing tool directly responded to the dilemma between enhancing the transparency of sentencing decisions and avoiding infringing judicial independence. The first proposed solution by the Judicial Yuan was straightforward, to provide a case database with search tools.

(b) Methodology and maintenance

The methodology of providing a case database as the sentencing tool stems from two presumptions: first, like cases should be treated alike; and, second, if how cases which were similar to the present case have been decided by other judges in the past can be easily checked, the average and the distribution of the sentencing decisions in past judgments shape the benchmarks which assist all stakeholders – the judges, the parties and the civil society – to examine the consistency and reasonableness of the sentencing decision for the present case.

In order to realise such a methodology, the Judicial Yuan recruited two sets of people: experienced criminal court judges and law graduates. The former creates the instructions on what factors in the judgments are relevant in defining a 'like case' that must be tagged. Taking sexual assault offence as an example: factors may cover those already stipulated in the law, for example, whether the accused trespassed into the residence of the victim, and circumstantial factors not specified by the law, such as whether the victim suffers from mental illness or was impregnated due to the assault. The latter then follows those instructions, examines all the applicable judgments and tags the factors accordingly.

(c) User interface

Entering by selecting a category of offence, the users may input factors from sets of options; some are single-choice, whereas some are multiple-choice, corresponding to the codebook created by the aforementioned judges. Figures 8.1 to 8.4 display the output. Responding to the input, the page simultaneously shows the number of matches. After clicking search, the next page displays the average distribution of sentencing decisions handed down in those matching judgments.

Once released exclusively to judges in 2012, users soon found the intrinsic limitation of the first-generation tool: the more factors selected, the fewer matches were found. For example, a ten-times gap can be found between Figure 8.1 (2,826 matches of fraud cases where three options were ticked: the specific provision of the aiding fraud offence that was charged, the provision of a deduction of the sentence was applied, and the offender has acquired financial benefit) and Figure 8.2 (246 matches when an additional option, 'motivation for the crime, was due to financial difficulties', was ticked). It is common to find only a handful or zero matches if a user attempts to input all factors, which invokes the pitfall of lacking representativeness.

Figures 8.3 and 8.4 illustrate various aspects of sentencing decisions in judgments based on similar facts in the past. These statistics provide a useful reference for judges. Judges can use this information to quickly acknowledge how their colleagues make decisions and then apply it to the present case, as long as the statistical base is not too small and thus unreliable. Another pitfall is the maintenance cost due to the reliance on human readers to exercise the tagging process.[6] In 2019, the Judicial Yuan ceased further maintenance of the first-generation sentencing system, partly due to the maintenance cost concern.

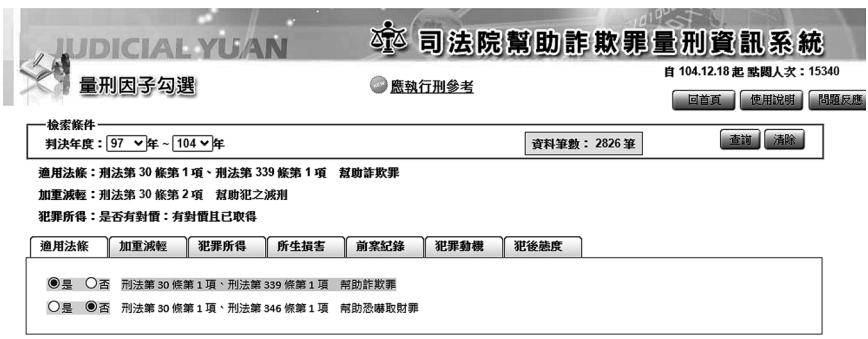

Figure 8.1 A page of the first-generation system displays results (2,826 matches) when the user assigns three factors

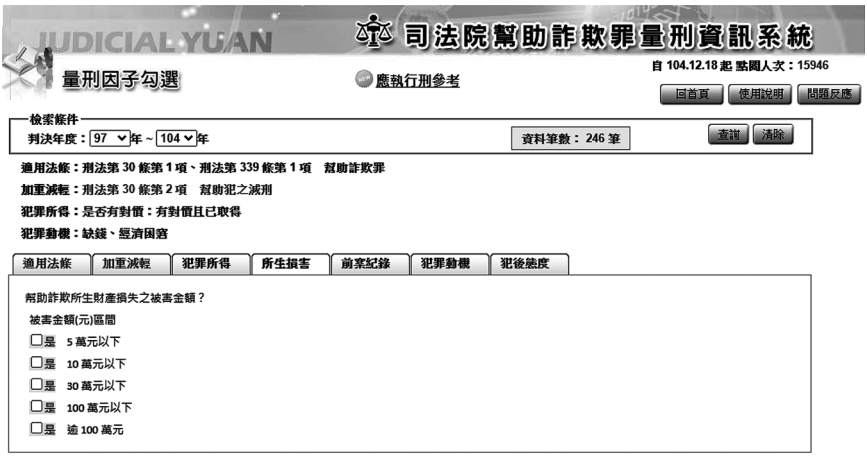

Figure 8.2 A page of the first-generation system displays the number of matches where the user assigns four factors

Figure 8.3 A page of the first-generation system displays the distribution of sentences in DUI cases

Note: The box on the right lists the factors assigned in a search result of the distribution of sentences in DUI cases: judgments made in 2010, the specific offence of DUI (Article 185-3 of the Criminal Code), the cause of unsafe driving being alcohol-related, breath alcohol intensity test results of 0.5 to 0.74 mg/L, no harm to others, and the vehicle type being a motorcycle. The table at the top indicates that eighty-six offenders were fined, eighty-seven received a sentence of less than fifty-nine days' imprisonment, one received a combination of both, and thirty-one were sentenced to more than sixty days' imprisonment. The percentages are shown.

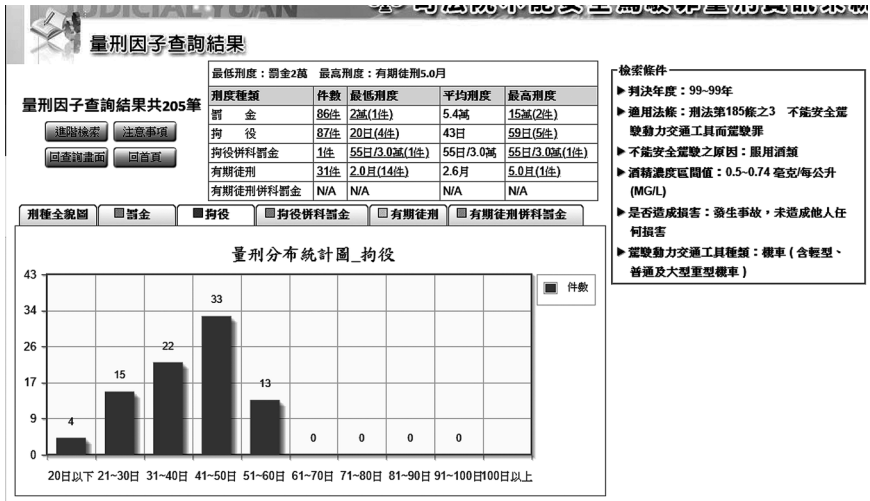

Figure 8.4 The distribution of specific cases in which offenders were sentenced to fewer than 59 days of imprisonment for DUI cases (per Figure 8.3 search)

Note: Figure shows the distribution of the specific cases in which the offenders were sentenced to fewer than fifty-nine days of imprisonment for DUI cases (per the search conducted in Figure 8.3) matching the assigned factors. This chart specifically shows the number of individuals sentenced to imprisonment for fewer than fifty-nine days: thirteen sentenced to fifty-one to sixty days, thirty-three sentenced to forty-one to fifty days, and so on.

II. Second generation (the sentencing trend system)

(a) Motivation for procurement

To compensate for the limitation of the first-generation tool and explore the possibility of establishing normative guidelines, the Judicial Yuan developed the Sentencing Trend System with a predictive function (hereinafter referred to as the second-generation system) in 2014[7] and released it to the public in 2018.

(b) Methodology and maintenance

The methodology of the second-generation system is rooted in the presumption that each criminal conduct corresponds to normatively proportionate sentencing, and the contribution to the sentencing of each factor can be quantified. The methodology of the second-generation system, therefore, goes: a normatively proportionate range of sentencing for any case can be predicted provided the factors involved in the particular case can be ascertained and each applicable factor has been assigned a quantified contribution value to the sentencing.

Similar to the first-generation tool, first, the Judicial Yuan recruited judges to create the codebook and law graduates to execute accordingly. Second, all

tagged factors in all applicable judgments undergo regression analysis to find out the contribution, a quantified positive or negative value, of each factor to the sentencing decision. Third, the statistical finding of the contribution of each factor is reviewed by a focus group comprising stakeholders including the sitting judges, prosecutors, practising lawyers, academics and interest groups in civil society.[8] The focus group deliberates over whether the statistical finding coincides with their expectation; if not, the statistical finding would be tendered to reflect a more reasonable contribution.[9]

(c) User interface

The users enter offence from eight categories as presented on the homepage (Figure 8.5). The user may select from lists of applicable factors: for example, in the sexual assault offence, whether the defendant was younger than twenty years old, the number of victims, whether the defendant pleaded guilty, if any instruments other than body parts were used during the criminal conduct, from the left panel (Figure 8.6).

The right panel displays the suggested penalty in the upper box and a range of suggested penalties in the lower box (Figures 8.7 and 8.8 show search results of DUI and Fraud cases, respectively). These values vary simultaneously once the user ticks or unticks different boxes. The users can select

Figure 8.5 The homepage of the second-generation system

Figure 8.6 Page displayed after selecting one of the eight categories of offences: sexual assault case

from the options in the left panel but cannot insert factors unknown to this system. Subsequently, the adding-up generates the suggested penalty.

III. Third-generation (machine-learning sentencing database)

(a) Motivation for procurement

The loss of law graduates as human resources urged the Judicial Yuan to review the practicality of updating the databases for existing tools. The Judicial Yuan, therefore, began the procurement of artificial intelligence-involved technologies to compensate for the required reading and tagging work previously done by human readers. The third-generation tool, the Sentencing Information Systems, applied semantic labelling and automated tagging to replace the reading and tagging work. It was released to the judges on 6 February 2023.

(b) Methodology and maintenance

The third-generation system comprises two sets of search tools, fact-based and evaluation-based. The former is a renewed first-generation system, in which the human tagging work is replaced by algorithms, semantic

Figure 8.7 Suggestions for DUI cases based on assigned factors (no matching cases)

labelling and automated tagging. The latter is another search tool applying an independent set of search terms. The methodology of the latter shows the user how the positive or negative evaluation of each fact factor in similar cases would impact sentencing decisions in past judgments. For example, a search term might be 'the user gave positive (sympathetic) evaluation to the circumstances under which the accused committed the offence'; whereas the average, range and distribution of the sentencing handed down in the past judgments applying the assigned evaluation factor displays accordingly.

(c) User interface

The UIs for the two search tools are separated. On the fact-based search page, the users may select the offence (Figure 8.9). After entering the second layer, users may designate the fact factors considered in past cases: for example, in DUI cases, the volume of alcohol consumed, whether injuries were incurred, the type of vehicle used, and whether the defendant is a recidivist of the same offence (Figure 8.10). The number of matches may change in response to the user selection. After submission, the next page

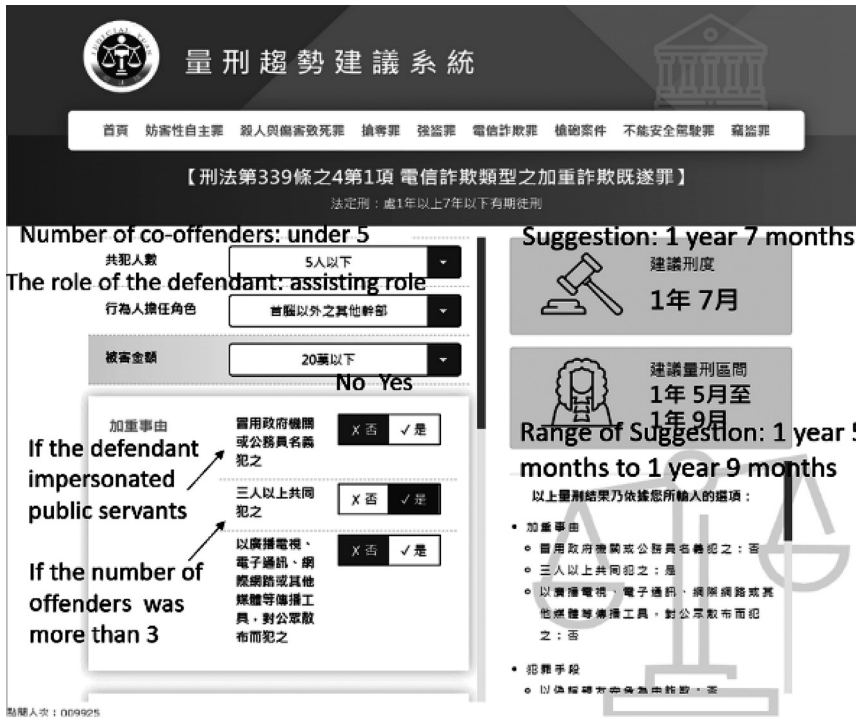

Figure 8.8 Page displaying an instance of fraud

shows the distribution of sentencing decisions matching the designated fact factors in past judgments, by types of punishment or terms of imprisonment (Figures 8.11 and 8.12).

In the evaluation-based system, users enter offences (Figure 8.13). Then, the users may assign their evaluation on each factor as for/against/neutral (on the accused). The factors to which users may assign their evaluation include the post-commission attitude, the damage incurred, the personality of the defendant, the victim's attitude, etc. The number of matches and the distribution of the sentencing decision are displayed simultaneously according to the input (Figures 8.14 and 8.15).

The comparison between Figures 8.14 and 8.15 demonstrates that when more options for 'evaluation for the defendant' were selected, the outcome favours softer sentencing decisions. This is shown from the concentration of the shorter bars on the left side of the distribution chart, given that the total number of cases distribution (curve) remains unchanged.

Figure 8.9 Homepage of the third-generation fact-based sentencing information platform

Figure 8.10 Options display: factors stipulated in Criminal Code

Figure 8.11 Search results show the average, range and percentage of sentencing decisions in the matching judgments

Note: Search result displays DUI judgments for cases involving breathalyser test outcomes between 0.75 and 0.99, the vehicle used being a motorcycle, no harm done to others, the offender having a driving licence, having one DUI record, and pleading guilty.

Figure 8.12 Distribution of sentencing decisions in the same matching judgments

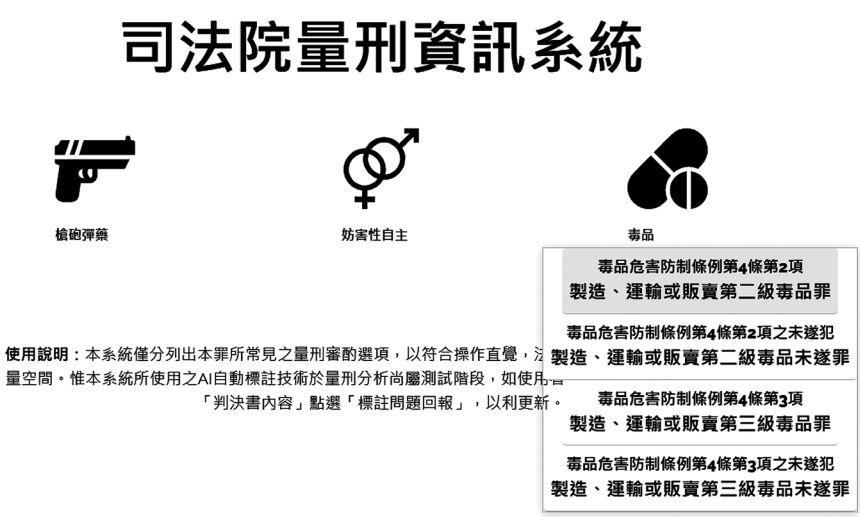

Figure 8.13 Homepage of the third-generation evaluation-based sentencing information system

Note: This system includes three categories of offences: firearms-related, sexual assault, and narcotics-related offences. The Figure uses the narcotics-related category as an example, showing each category can be unfolded into several provisions.

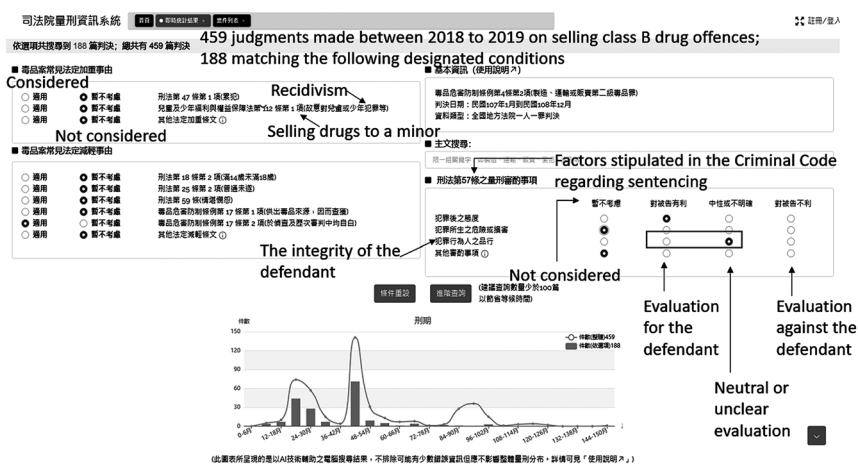

Figure 8.14 The second layer of the evaluation-based system shows the distribution of sentencing decisions handed down in matching judgments

Note: The page displays the total number of judgments in this category within a specific time-frame from 2018 to 2019. The red number shows the number of matching judgments that meet the designated evaluation for each factor: the common aggravating or mitigating factors in drug-related cases and general sentence-related factors.

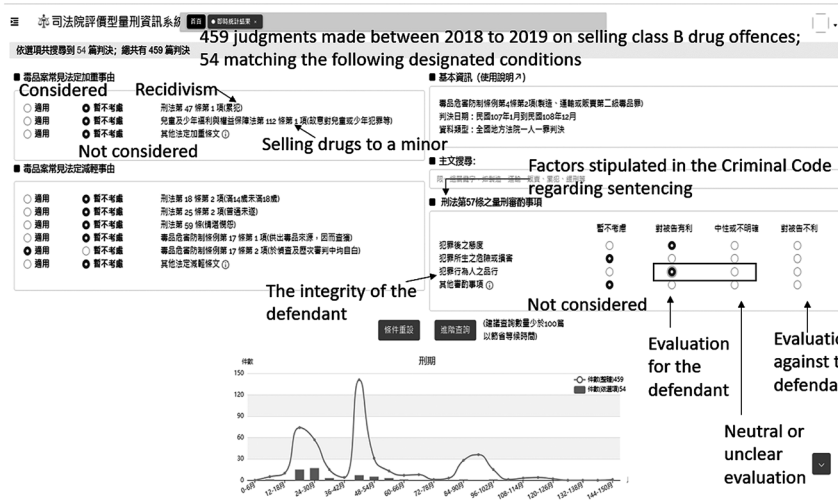

Figure 8.15 Distribution of sentencing decisions handed down in matching judgments

Note: A change that was made (compared to Figure 8.14) was how the factor 'the integrity of the defendant' was evaluated. In Figure 8.14, this factor was not considered, but in Figure 8.15, only judgments that gave a positive evaluation to the integrity of the defendant were counted. As a result, the number of matching cases dropped to 54.

C. SENTENCING LEGAL TECHS AMID CHANGES – CONSTITUTIONAL COMPLAINTS AND CITIZEN JUDGES

This chapter aims to assess the constitutional implications of the technologies on sentencing contextually, taking into account both the users of the systems and the reviewers of the sentencing decisions. Therefore, the background where two legal regimes recently came into force must not be overlooked: first, the entry into force of the Constitutional Court Procedural Act 2022 (CCPA 2022), which envisaged the constitutional review of judgments; and, second, the entry into force of the Citizen Judges Regime in 2023, which expands the concept of 'judges' to include lay persons with no prior knowledge of how sentencing decisions were made in the past.

The first represents a new possibility in the way that sentencing decisions might be reviewed in the future. In Taiwan, the review of sentencing decisions has been exclusive to the superior courts, the High Court and the Supreme Court, whereas the constitutional review of legislative acts is exclusive to the Taiwan Constitutional Court (TCC). The Constitutional Court Procedure Act 2022 bestowed on the TCC an extra jurisdiction to review the constitutionality of how judges interpret and apply those laws.[10] In other words, it now becomes possible for the TCC, if requested by

individuals, to review the constitutionality of the judge's interpretation of the laws stipulating sentencing matters, which includes the judge's philosophy and methodology on exercising their discretion on sentencing, with or without technological sentencing tools.

The second represents the emergence of a new group of stakeholders who have access to technological sentencing tools. Although no evidence suggests substantial reliance of the current users, the professional judges, on the existing first-and-second generation systems (details see D.I. 'Conceptualising a fair court – the independent judges and the responsibility to reason'), the status quo is likely to change following the introduction of the Citizen Judges regime, which changes the compositions of the 'judges' backgrounds'. Since the new group of 'judges' will face difficult decisions, it will be worth observing whether this new group tends to refer to or rely on the statistics showing a taxonomy of sentencing decisions made in the past. As a result, after the entry into force of the Citizen Judges Act in 2023, it is not fanciful to expect the practicality of the sentencing system and the judges' willingness to consider referring to the sentencing legal techs to increase.

The following section discusses the constitutional reflections based on precedents regarding the relevant principles of sentencing laid down by the TCC in the past, the practical application of technologies on sentencing and their constitutional issues in the present and the future involving the two new regimes.

D. CONSTITUTIONAL ISSUES – THE CHALLENGE OF DUE PROCESS

The TCC has not yet directly ruled on issues related to the application of technologies on sentencing. However, some case law of the TCC has been established in criminal justice discourse and is worth looking at. It is the TCC's settled case law that punishments must only be imposed by a formally and substantively fair court;[11] to comply with the constitutional safeguard of due process, only admissable evidence verified within an adequate process shall be used against a criminal defendant,[12] who has the right to know and challenge the evidence used against them.[13] It is also the TCC's settled case law that any punishment shall be given by a court whose discretion is intact,[14] in the manner that judges have discretion to apply individualised punishment or treatment responding to the gravity of the conduct and the culpability of the offender (the proportionality of punishment, or the principle of *Nullapoena sine culpa*).[15] Meanwhile, the right not to be discriminated against, or the principle of equality, is explicitly enshrined in the Constitution, which concretises the mandate that 'like cases should be treated alike'. Stemming from these case laws, the following subsections attempt to conceptualise three constitutional mandates in the context of applying technologies on sentencing: the concept of a fair court (D.I); the concept of admissibility of

evidence and the right of the defendant to know the evidence used against them (D.II); and the concept of proportionate sentencing will be revisited in the legal tech context (D.III).

I. Conceptualising a fair court – the independent judges and the responsibility to reason

Two dimensions related to the court are worth discussing in the context of the application of technologies to sentencing. First, judicial independence, as a pillar of the rule of law, is enshrined in the Constitution, which stipulates that judges shall only be bound by law and shall not be interfered with internally or externally when carrying out their duties.[16] In this regard, the application of sentencing tools might concern judicial independence if the sentencing suggestions produced by the technological tools gain substantial binding force. One example of the substantial binding force is where the higher court would quash the lower court's sentencing decision if the latter deviated from the suggestions generated by sentencing tools.

Second, this chapter proposes that the constitutional mandate of a fair court encompasses that the judges, to an extent, are obliged to give adequate reasons that support their judgment.[17] However, it must be clarified that there is no case law of the TCC directly affirming this obligation since it concerns the allocation of judicial resources. Such an obligation often hampers judicial efficiency and worsens the workload of judges. The concretisation of such a potential constitutional mandate in the context of the application of sentencing tools may be that judges bear the obligation to state how they applied the sentencing tools, as well as whether and why they adopted or disregarded the suggestions.[18]

Neither did these issues invoke prominent concerns or spark wide discussion in Taiwan. The present writer attributes this to a low reliance on the first-and-second-generation systems in the practice of judges, which coincides with the proclamation of the Judicial Yuan that judges are not bound by the suggestions generated by the systems. The writer observes no obvious impetus suggesting such reliance might increase after the introduction of the third-generation system or the entry into force of the CCPA 2022.

Nevertheless, the entry into force of the Citizen Judges regime in January 2023 is likely to distil such equilibrium. For applicable cases, the Citizen Judges regime changes the background of the judges, from solely professional to partly laypersons and partly professionals. It is arguable that the scientific outlook and methodology of the first-and-second-generation sentencing tools, reflecting that the outputs represent the decisions of experienced professionals, may compensate the layperson's confidence in making the sentencing decision, which subsequently reinforces the layperson's willingness to rely on, or even abide by, the suggestion generated. Moreover, the Judicial Yuan explicitly indicated that facilitating the

sentencing procedure in Citizen Judges' involved cases is the main impetus of the third-generation AI-based system.[19] It would be unsurprising if the further 'hi-tech' third-generation system attracts more applications and enhances reliance.

It is therefore suggested that the future challenge is likely to focus on how to ensure the proper technological literacy of the Citizen Judges. Citizen Judges should be informed that factors that contribute to proportionality in sentencing often interrelate with each other;[20] that the function of a trial court includes restoring justice, conflict and achieving social cohesion;[21] and that no legal tech or algorithm can replace the 'independent mind' of a judge.[22]

II. Revisiting the defendant's right to know and challenge the evidence used against them

Under the guarantee of due process and the right to a fair trial, it is the TCC's settled case law that the accused individuals enjoy the constitutional right to know and challenge the evidence used against them. In circumstances where the sentencing suggestion generated by the system is referred to in the judgment, such a suggestion fulfils the widest concept of evidence. The issue then arises as to whether the defendant is entitled to request the disclosure of the algorithms – if any – built into the systems, and the methodology of the systems. A wider out-spill of the issue is whether the defendant is entitled to request the disclosure of what search terms the judge has input to get the output suggestion, as to the methodology inside the judge's mind regarding how they decide to adopt or disregard the suggestions. The latter represents the flip of the coin of the judge's obligation to reason (already addressed in illustrated in D.I).

The issue of disclosure concerns the so-called technological black box. Once requested by the defendant, the relevant information, especially the quantification, formula forming of the system, the date and methodology,[23] and/or algorithm,[24] should be explained to fulfil the defendant's effective opportunity to challenge the reasonableness and admissibility of the evidence.[25] This coincides with the famous umbrella term 'technological due process', proposed by Citron,[26] and the auditability, transparency, and consistency, in the specific context of an algorithm by Villasenor and Foggo[27] and others.[28]

So far, defendants have little motivation to challenge in this regard because of the low reliance of judges on the sentencing systems. However, this aspect of legal challenges might be enriched after the introduction of the AI-based third-generation system by several factors coming into play: the precision of auto-tagging and explainability of the semantic labelling,[29] the neutrality of the evaluation factors is biased,[30] and whether the bias may be corrected.[31]

Moreover, it is worth observing whether the concept of the right to know and challenge evidence used against them would evolve, particularly following the likely increasing reliance on sentencing tools following entry into force of the Citizen Judges regime (as illustrated in Figure 8.4: the defendant's lawyer challenged the black box).

III. Conceptualising fairness in sentencing – between proportionality and equality

It is noteworthy that in a specific case involving a sentencing system, the Supreme Court and the High Court had differing views. The issue of fairness in sentencing was featured in a debate between the two courts. In this case, the High Court was asked to review the fairness of the sentencing decision made by the District Court. The defendant appealed on the ground that the latter's decision was disproportionate. The High Court overturned the District Court's decision. The judgment indicated that, after searching in the first and second-generation systems, it was clear that the District Court's decision departed from the suggestion and average sentencing decision in similar cases. Based on the principle of equality, a justification is required for this discrepancy. As the District Court failed to explain such a discrepancy, its sentencing decision cannot sustain the principle of equality and must be overruled.[32] The Supreme Court was then asked to review the High Court's decision, and it upheld the decision, however, for a contrasting rationale. The Supreme Court emphasised that judges must focus on the specific details of each case when making sentencing decisions[33] to ensure that individuals receive appropriate and tailored punishment. This means judges must not consider irrelevant information from other cases, including decisions of other cases shown in the sentencing systems.[34]

The Supreme Court's view indicates the tension between the legitimacy of any sentencing system and the constitutional principles regarding sentencing. Some even comment that the Supreme Court's ruling, despite not explicitly stating that considering the past data *per se* violates the principle of proportionality and individualised sentencing, has eliminated the practicality of the first-and-second generation systems.[35] A dilemma for judges therefore emerges. Consulting the sentencing tools might help a judge fulfil their task to treat their present case like other 'like cases.' Meanwhile, consulting the sentencing tools might hamper the judge's duty to concentrate on the present case and disregard irrelevant information. The issue then becomes, in the language of criminal procedure, whether the output generated by the first-generation system is admissible;[36] and in the language of the Constitution, whether there is a constitutional space left for the judges to apply sentencing tools in practice. After the expansion of the jurisdiction of the TCC due to the entry into force of CCPA 2022, it is worth observing whether the TCC would

elaborate further regarding the nuance between the principle of equality and proportionality.

Another issue is the 'narrowing effect,' which refers to judges' inclination to decide similarly due to consulting the same sentencing system. It is worth observing whether the Courts would elaborate more, after the introduction of the third-generation system and the involvement of layperson judges, on whether fairness is bestowed with dynamic meaning,[37] whether the narrowing effect derived from the application of aggregated data and/or algorithm is desired,[38] or it should be avoided because algorithms do not reflect the degree of severity and might worsen the correctness of the information.[39]

E. CONCLUSION

This chapter introduced three generations of sentencing tools with different methodologies for applying technology. The first-generation search tool and the second-generation (normative) sentencing trend system in Taiwan were the Judicial Yuan's responses to the public's call for transparency and predictability in sentencing. Few constitutional challenges have been raised so far, partly due to awareness of the danger of breaching the principle of individualised sentencing specified by the Supreme Court, and partly due to the professional judges' low reliance on the sentencing tools.

This discussion proposed that the change of users, the change of reviewers of doctrines, and the change of the technology itself are variants of the constitutional implication of sentencing tools. The entry into force of the Citizen Judges regime in January 2023 is likely to put the application of technology on sentencing under the real pressure test by adding a new type of user. If reliance on the sentencing tool increases, the constitutional mandate for a fair court where the judges bear the obligation to reason might be further discussed and defined.

In the same thread, the release of the third-generation systems in February 2023 represents a change in the technology itself. It also increases the likelihood that the accuracy of the technology and the transparency of algorithms would be challenged under the issue of how to carry out the defendant's right to know and challenge the evidence used against them.

The entry into force of the CCPA 2022 adds another variant as a potential competent reviewer of doctrine emerged. The settled doctrine set by the Supreme Court that little space is left for the application of sentencing tools without jeopardising the principle of proportionality, that is, giving individualised sentencing, its intersection with the principle of equality and other applicable doctrines can now possibly be revisited and further elaborated if the TCC decides to admit a complaint regarding the methodology of applying technology on sentencing. The future of these three dimensions remains worth observing.

NOTES

1. Rich Chang, '"White Roses" slam government inertia', *Taipei Times* (July 2011) <www.taipeitimes.com/News/front/archives/2011/07/18/2003508499> (accessed 15 May 2023).
2. '司法院研議建制量刑資訊系統　減少歧異', *Judicial Yuan Weekly* (April 2011) <www.judicial.gov.tw/tw/cp-1429-71505-7757b-1.html> (accessed 15 May 2023).
3. The elements to be considered in sentencing are laid down in Article 57 of the Criminal Code (2006). Ten elements are enumerated, including the motive and purpose of the offence, the stimulation perceived at the moment of committing the offence, the means used for the commission of the offence, the offender's living conditions, the disposition of the offender, the education and intelligence of the offender, the relationship between the offender and the victim, the seriousness of the offender's obligation violation, the danger or damage caused by the offence, and the offender's attitude after committing the offence.
4. 'Sentencing Section' (*Judicial Yuan official website*) <www.judicial.gov.tw/tw/cp-83-57186-1ef46-1.html#%E9%87%8F%E5%88%91%E8%B6%A8%E5%8B%A2%E5%BB%BA%E8%AD%B0%E7%B3%BB%E7%B5%B1> (accessed 15 May 2023).
5. '因應國民法官新制，司法院啟用AI量刑資訊系統--具備二種模式、擁有四大優點' *Judicial Yuan Press Release* (February 2023) <https://www.judicial.gov.tw/tw/cp-1887-806741-d6471-1.html> (accessed 15 May 2023).
6. The recruitment of those law graduates, initially not by the Judicial Yuan, was ceased and led to a gap of timely maintenance. The sentencing, Judicial Yuan website available at <https://www.judicial.gov.tw/tw/cp-83-57186-1ef46-1.html> (accessed 4 Aug 2024).
7. The sentencing trend system <https://sen.judicial.gov.tw/pub_platform/sugg/index.html> (accessed 15 May 2023).
8. '司法院研討肇逃罪量刑資訊系統編碼表內容妥適性' (*Judicial Weekly*, May 2017), <www.judicial.gov.tw/tw/cp-1429-67645-4dc34-1.html> (accessed 15 May 2023).
9. A series of conferences have been held on the inclusion of the sentencing factors responding to different offences, e.g. 'Drug Dealing' (*Judicial Yuan*) <www.judicial.gov.tw/tw/cp-1429-67367-c766e-1.html> (accessed 15 May 2023); 'Trade Secret' (*Judicial Yuan*) <www.judicial.gov.tw/tw/cp-1429-66951-1928d-1.html> (accessed 15 May 2023). '司法院持續建置多項量刑資訊　趨勢建議系統年底開放查詢' (*Judicial Weekly*, September 2018) <www.judicial.gov.tw/tw/cp-1429-66723-c580b-1.html> (accessed 15 May 2023).
10. 'The Constitutional Court Procedure Act entering into force: A New Era of Constitutional Court in Taiwan' (*TCC website*, January 2022) <https://cons.judicial.gov.tw/en/docdata.aspx?fid=2175&id=339891> (accessed 15 May 2023).
11. Interpretation J.Y. No. 436 (1997) <https://cons.judicial.gov.tw/en/docdata.aspx?fid=100&id=310617> (accessed 13 February 2024).
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16. Article 80 of the Constitution of R.O.C. (Taiwan); Interpretation J.Y. No. 370 (1995) <https://cons.judicial.gov.tw/en/docdata.aspx?fid=100&id=310551> (accessed 13 February 2024).
17. The TCC once affirmed the constitutionality of the legal provision which stipulated that the Administrative Court shall give reason when dismissing a case. Interpretation J.Y. No. 170 (1981) <https://cons.judicial.gov.tw/en/docdata.aspx?fid=100&id=310351> (accessed 13 February 2024).
18. Vincent Chiao, 'Predicting Proportionality: The Case for Algorithmic Sentencing' (2018) 37(3) *Criminal Justice Ethics* 238.
19. 因應國民法官新制，司法院啟用AI量刑資訊系統--具備二種模式、擁有四大優點 (n. 5).
20. Also see 'Holism in the theory of reasons' in Jonathan Dancy, *Ethics Without Principles* (Online edn, Oxford University Press, 2004).
21. 林勤富 '智慧法院之發展與界限（下）─演算法、科技治理與司法韌性' [2022] 324 月旦法學雜誌 109, 112.
22. Ibid., 113.
23. Mark L. Shope, 'Lawyer and Judicial Competency in the Era of Artificial Intelligence: Ethical Requirements for Documenting Datasets and Machine Learning Models' (2021) 34(1) *Georgetown Journal of Legal Ethics* 191-[iv].
24. Danielle Kehl, Priscilla Guo and Samuel Kessler 'Algorithms in the Criminal Justice System: Assessing the Use of Risk Assessments in Sentencing' (2017) Responsive Communities Initiative, Berkman Klein Center for Internet & Society, Harvard Law School; also see ibid.
25. Jonathan Dancy (n. 20); Cyrus Tata, 'The Application of Judicial Intelligence and "Rules" to Systems Supporting Discretionary Judicial Decision-Making' in G. Sartor and K. Branting (eds), *Judicial Applications of Artificial Intelligence* (Springer, Dordrecht 1998).
26. Other values encompass accuracy, accountability, participation and fairness. See Danielle Keats Citron, 'Technological Due Process' (2008) 85 Wash. U. L. Rev. 1249, 1308.
27. John Villasenor and Virginia Foggo, 'Artificial Intelligence, Due Process and Criminal Sentencing' (2020) 2 *Michigan State Law Review* 295–354.
28. Kehl and others (n. 24).
29. Han-Wei Liu, Ching-Fu Lin and Yu-Jie Chen, 'Beyond State v. Loomis: Artificial Intelligence, Government Algorithmization, and Accountability' (2018) 27(2) *International Journal of Law and Information Technology* 122.

30. For example, Kehl and others noted, in the context of risk assessment, the risk of bias and lack of reliability in sentencing could result in revival of discrimination against age, socio-economic status, and gender. See Kehl and others (n. 24).
31. Shope indicated several biases that could contribute in the machine-learning and the suggestion output (see n. 23); Chiao proposed the solution to the worry regarding reinforcement of biases by detecting biased factors and reducing the impact of unjustified consideration: Chiao (n. 18), 253.
32. Taiwan High Court 105-Chiau-Shang-Yi No. 117.
33. Supreme Court 108-Tai-Shan No. 3728 Criminal Judgment. Same rationale, also see Supreme Court 108-Tai-Kang No. 436 Criminal Verdit, 107 Tai-Kang No. 2797 Criminal Judgment.
34. This resonates with the fairness proposed by academics: see Douglas A. Berman, 'Re-balancing Fitness, Fairness, and Finality for Sentences' (2014), 4 Wake Forest J. Law & Policy 151, 157–8.
35. '蘇凱平, '以司法院量刑資訊作為量刑之內部性界限？ ——評最高法院108年度台上字第3728號刑事判決' (August 2020) Court Case Times 85–94.
36. Villasenor and Foggo (n. 27), 314.
37. Comparable ideas are 'dynamic fairness' proposed by Chouldechova and others, Alexandra Chouldechova and Aaron Roth, 'A Snapshot of the Frontiers of Fairness in Machine Learning' (2020) 63 *Communications of the ACM* 82 <https://doi.org/10.1145/3376898> (accessed 13 February 2024); also 'legal concept of fairness' proposed by Kehl and others (n. 24).
38. Proposed by Chiao (n. 18), responded by Jesper Ryberg, 'Sentencing Disparity and Artificial Intelligence' (2023) 57 *The Journal of Value Inquiry* 447.
39. Ibid.

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