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The use of AI in formulating a criminological prognosis of an offender

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Abstract. The article raise the issue of the use of AI (artificial intelligence) in formulating the criminological prognosis of an offender. The issue is analyzed in view of the institution of conditional early release from serving the rest of the imprisonment sentence. The authors point to several AI tools for making offender criminological predictions. An analysis of their application in various European countries shows that the question of whether their use should be considered ought to be replaced with the question of whether their use should be considered probably ought to be replaced with the question of how to use them, so that they can actually meet the objectives set for them.

Keywords. AI, criminal law, criminological prognosis, conditional early release

1. The subject of the article

The subject of this article is the issue of the use of AI (artificial intelligence) in formulating the criminological prognosis of an offender. The issue is analyzed in view of the institution of conditional early release from serving the rest of the imprisonment sentence, thus the institution being one of the measures related to submitting an offender to a test, provided for in the legal systems of most European countries. Naturally, the methods of regulation that institution in individual legal orders differ from each other, but at least in some of them the legislator requires the court to make an adequate criminological prognosis of the offender, that is – in other words – an attempt to predict if the offender will return to crime after their conditional early release or not.

To confirm the aforementioned statements, it should be pointed out that – for example: 1) the Estonian Criminal Code provides that a court may release an offender convicted in a criminal offence in the second degree or criminal offence in the first degree through negligence on parole, if he or she has actually served: 1) at least one-third but not less than four months of the term of the imposed punishment and agrees to the application of the electronic surveillance provided for in clause 75 (2) 9) of this Code; or 2) at least one-half but not less than four months of the term of the imposed punishment. A court may release an offender convicted in an intentionally committed criminal offence in the first degree on parole, if he or she has actually served: 1) at least one-half but not less than four months of the term of the imposed punishment and agrees to the application of the electronic surveillance provided for in clause 75 (2) 9) of this Code; or 2) at least two-thirds but not less than four months of the term of the imposed punishment. In deciding release on parole, the court shall take into consideration the

circumstances relating to the commission of the criminal offence, the personality of the offender, his or her previous personal history and conduct during the service of the sentence, including participation in any activities which reduce the risk of commission of the criminal offence or consent to participate in such activities during supervision of conduct, his or her living conditions and the consequences which release on parole may bring about for the offender (§ 76)¹; 2) the Spanish Criminal Code provides that the Parole Board Judge shall order the suspension of the rest of the imprisonment sentence and shall grant probation to convicts who fulfil the following circumstances: a) Who have attained pre-release prison treatment; b) Who have served three quarters of the sentence handed down; c) Who have a record of good conduct. In order to determine the suspension of the rest of the sentence and to grant probation, the Parole Board Judge shall take into account the personality of the convict, his record, the circumstances of the criminal offence committed, the significance of the legally-protected rights that may be affected by a repeat offence, his behaviour while serving the sentence, his family and social circumstances and the expected consequences of the actual suspension on the serving and fulfillment of the measures imposed (Article 90)²; 3) the German Criminal Code provides that the court suspends enforcement of the remainder of a determinate sentence of imprisonment on probation if 1. two thirds of the imposed sentence, but at least two months, have been served, 2. this can be justified having regard to public security interests and 3. the convicted person consents thereto. The decision is, in particular, to take into consideration the convicted person's character, previous history, the circumstances of the offence, the importance of the legal interest endangered should the convicted person re-offend, the convicted person's life circumstances and conduct whilst serving the sentence imposed, and the effects which such suspension are expected to have on the convicted person (Article 57)³.

A similar regulation can also be found in the Polish Criminal Code, according to which: "The court may only release on licence an offender sentenced to imprisonment from serving the balance of the penalty, if his or her attitude, personal attributes and features, lifestyle prior to carrying out the offence, the circumstances of the offence and the offender's conduct after committing the offence and while serving the sentence, justify the assumption that the offender will, after release, respect the legal order, and in particular that he or she will not re-offend" (Article 77).

¹ <https://www.riigiteataja.ee/en/eli/ee/515072020011/consolide/current> (accessed: 2.07.2021).

² https://www.mjjusticia.gob.es/es/AreaTematica/DocumentacionPublicaciones/Documents/Criminal_Code_2016.pdf (accessed: 2.07.2021)

³ https://www.gesetze-im-internet.de/englisch_stgb/englisch_stgb.html#p0358 (accessed: 2.07.2021). The situation is somewhat different in France. This is because, according to Article 729 of the French Code of Criminal Procedure, the aim of parole is the social reintegration of prisoners and the prevention of re-offending. Convicted persons who have to serve one or more custodial sentences may be granted parole if they show serious efforts towards social reintegration, especially if they can prove that they work, or prove their regular attendance at teaching or training courses, or work experience or a temporary job with a view to their social reintegration, or their essential participation in family life, or of their need to undergo treatment or their efforts with regard to compensating their victims (https://www.legislationline.org/download/id/6381/file/France_CPC_am2006_en.pdf, accessed: 2.07.2021). In other words - in France, attention is paid to the current efforts of the convict to reintegrate him into society. Perhaps this is the right way and it should be replaced by making a criminological prognosis (predicting the future) with an assessment of what is happening here and now (what efforts are made by the convict). An interesting solution is also provided by the Swedish law (Swedish Criminal Code), which provides that when two-thirds, but at least thirty days, of a fixed term of imprisonment has been served, the sentenced person is conditionally released (Section 6 Chapter 26). But if there are special grounds against conditional release, it is postponed. When assessing whether there are special grounds against conditional release, particular consideration is given to whether, during enforcement in a correctional institution, the sentenced person: 1. has not participated in or has neglected assigned measures that are intended to prevent relapse into crime or promote their readjustment to society; or 2. has otherwise in a serious way breached the provisions and conditions that apply to enforcement (Section 6a Chapter 26) (<https://www.government.se/49bfe4/contentassets/7a2dcae0787e465e9a2431554b5eab03/the-swedish-criminal-code.pdf>, accessed: 2.07.2021).

Unfortunately, it turns out that the issue of making a criminological prognosis of an offender is exceptionally complicated, and the courts sometimes are unable to do it. This conclusion was drawn by the authors based on the analysis of the practice of the Polish common court that will be discussed in more detail later in the work. In a general sense, it can be said that the practice of Polish common courts in making criminological prognosis is inadequate and does not guarantee certainty that the conditionally early released offender will not continue to behave unlawfully.

Moreover, the literature indicates that: “It is well known that humans generally do not have the best track record when it comes to making rational decisions and judgments (e.g., Grove et al., 2000). Even trained professionals do not fare nearly as well as basic actuarial algorithms when predicting human behaviors such as criminal recidivism (Andrews & Bonta, 2010), especially when faced with extensive information, limited feedback, and varying base rates for recidivistic events (Lin et al., 2020). The reasons for this are many, including the human mind’s limits on working memory and human susceptibility to cognitive bias, emotion, fatigue, and so on (e.g., Dawes et al., 1989). Augmenting human capabilities with actuarial algorithms and computer-aided tools, including ML, may help to improve risk assessment and decision-making for correctional clientele”⁴.

Considering the above, the authors attempt to verify whether there are tools that could help courts in making criminological prognoses, and if so – what are these tools and can they be introduced in individual legal systems. The authors focused their attention on new technologies, that is towards the potential possibility of supporting the human mind with computer systems which – although not having human emotions – have the ability to make an objective assessment of the risk of the offender relapsing to crime, based on properly prepared scripts and algorithms.

2. Criminological prognosis

A criminological prognosis is a prognosis made by proper authorities in order to determine the risk of the offender's return to unlawful behavior. As mentioned, this prognosis is the basis for applying the institution of conditional early release, but not only for that. It is also necessary to assess whether it is justified to hold the minor to criminal liability, conditional discontinuance of the proceedings, conditional suspension of the execution of the sentence, etc.

Thus, making a criminological prognosis appears to be necessary to decide what specific measures of criminal law will be adequate considering a given specific prohibited act and a specific offender. After all, punishment and other measures of criminal law are, by definition, not only supposed to just but also and perhaps above all, preventive, including preventive and educational as well as preventive objectives (protecting legal goods that are essential for the society) in relation to people who committed prohibited acts. In order to assess whether a given specific penalty in a given specific case will be necessary and sufficient from the perspective of the mentioned objectives, it is necessary to assess what is the perspective (prognosis) of a given specific offender in the event of failure to apply any of the measures of criminal law and in the event of applying individual measures. This is a sine qua non condition for an adequate criminal law response to the fact of committing a crime in a democratic state ruled by law, that is in a state where the authorities and society should not care about reacting in a harsh manner, but in a way that will allow an individual to function peacefully and conflict-free functioning in the society, and goods essential to the society – to have undisturbed existence.

⁴ Mehdi Ghasemi, Daniel Anvari, Mahshid Atapour, ‘The Application of Machine Learning to a General Risk–Need Assessment Instrument in the Prediction of Criminal Recidivism’ [2020] 48 *Criminal Justice and Behavior* 4, 520, doi: 10.1177/0093854820969753.

Naturally, problems arise in the context of making the aforementioned prognosis; these are problems related to determining: 1) what factors should be taken into account when making a criminological prognosis (whether only objective or also subjective, only static or also dynamic); 2) what importance should individual factors have when making a criminological prognosis and whether this importance should be static or dynamic; 3) whether to make a positive criminological prognosis it is necessary that all the circumstances related to a given case be in favor of the offender, or it is sufficient that only some of them are in his favor, etc.

In the context of factors relevant for making a criminological prognosis, K. Burdziak, M. Jankowski and M. Kowalewska-Łukuć, after analyzing the literature and judicial practice, found that these are the following general factors: 1) circumstances of committing a crime and behavior afterwards, 2) manner of living before committing a crime, 3) previous criminal record and previously used probation measures, 4) behavior in the criminal institution (inside), 5) behavior in the criminal institution (outside, e.g. furloughs, work outside the criminal institution), 6) personal conditions, 7) personal properties, 8) physical and mental health, 9) alcohol, drug addiction, etc., 10) attitude; and the following specific factors: 1) gender; 2) age; 3) health condition; 4) addiction; 5) previous way of life (before the criminal institution); 6) social affiliation; 7) profession learned / performed before the criminal institution; 8) profession learned / performed in the criminal institution; 9) workplace before the criminal institution; 10) education obtain before the criminal institution; 11) education obtained in the criminal institutions; 12) residence at the time the crime was committed; 13) family status at the time the crime was committed; 14) material conditions and earnings at the time the crime was committed; 15) general assessment of behavior in the criminal institution; 16) attitude to work in the criminal institution; 17) attitude to education in the criminal institution; 18) performance of the tasks specified in the individual program or individual therapeutic program; 19) personality traits; 20) life attitude; 21) attitude towards the committed crime and the aggrieved party; 22) prospects after conditional release; 23) attitude towards superiors; 24) attitude towards other inmates; 25) participation in the criminal subculture (in the criminal institution); 26) attitude to the regulations; 27) prizes / penalties in the criminal institution; 28) following orders; 29) description of specific behavior; 30) manner of spending free time; 31) behavior outside the criminal institution during furloughs in serving a sentence; 32) type of the committed crime; 33) the circumstances of the offense and the behavior after it has been committed; 34) history of convictions (excluding the current one); 35) history of previous measures relating to the submission of the offender to a test; 36) behavior during previous sentences in criminal institutions⁵.

However, what is the importance of individual factors for making an adequate criminological prognosis? Do all of them have to be in favor of the offender? These issues remain open and will most likely not get a commonly accepted solution for a long time.

3. Judicial practice in Poland

As mentioned, the issue of making a criminological prognosis of an offender is exceptionally complicated, and the courts sometimes are not able to make it. This kind of

⁵ See Jerzy Nikołajew, Konrad Burdziak, Michał Jankowski, Magdalena Kowalewska-Łukuć, 'Diagnostyka sądowo-kryminalna w orzekaniu i wykonywaniu warunkowego przedterminowego zwolnienia w teorii i praktyce sądowej – raport z badania' [2019], *Prawo w Działaniu* 39, 23-24.

conclusion was drawn by the authors on the basis of an analysis of the practice of Polish common courts. Therefore, it is worth bringing the attention to this issue⁶.

The issue of criminological prognosis, i.e. assessing the risk of recurrent criminal behavior, is an issue that arises in the Polish criminal law at every turn and that the proper analysis is a necessary condition for making rational decisions on what measures to take when dealing with an offender in the course of broadly defined criminal proceedings. It is particularly important in the context of court decisions regarding the conditional early release of the offender from serving the rest of the imprisonment. In this situation, considering the conditional early release, the court must decide whether the time the convict has spent in the correctional facility was sufficient for their rehabilitation, and thus – whether their return to society creates excessive risk for values protected by the law that are relevant for said society. Yet another question arises: are Polish courts properly prepared to perform this kind of procedures?

Unfortunately – the answer to the question above is not satisfactory. In 2018, the Institute of Justice in Warsaw (with the participation of the authors, who directed empirical studies) executed a research project titled *Diagnostyka sądowo-kryminalna w orzekaniu i wykonywaniu warunkowego przedterminowego zwolnienia w teorii i praktyce sądowej*, as part of which as many as 540 Polish criminal cases were analysed. As a result of the study it was found that, among others, 1) in 342 cases (over 63% of the assessed cases) in the justification for the decision on conditional early release of the offender from serving the rest of the imprisonment it was clearly stated which circumstances support the decision to grant conditional early release and which do not, whereas in 195 cases (over 36%) this was not done; 2) in 371 cases (nearly 69% of the assessed cases) it was clearly stated in the justification of the decision on conditional early release why a conditional early release should ultimately be granted, whereas in 166 (nearly 31%) this was not done; 3) in the justifications of decisions on conditional early release, by far and most often not all factors critical for making an adequate criminological prognosis and required by law were taken into account; 4) in the justifications of decisions, by far and most often small or very small numbers of factors that could affect assessment of the risk of recurrent criminal behaviour and the decision to grant (or not to grant) conditional early release were taken into account.

What is more, the description of factors applied in the justifications of decisions on conditional early release in the vast majority of cases was laconic, casual and only manifold some information included in the opinion of a director of a penal institution. By and large, it was not as much of a description as a list of factors taken into account by the court in a specific case.

Furthermore, in justification of court decisions no attempts were made in terms of an adequate interpretation of factors that may affect the criminological prognosis or the assessment of their prognostic value, be it *in abstracto* or *in concreto*. Lastly, the justifications of decisions lacked an actual and in-depth analysis of an offender's behaviour and personality, and, moreover, circumstances that were often uncomfortable were omitted.

There were also cases in which the arguments of the courts were questionable at least. For example – in one of the cases it was clearly indicated that the convict is a member of the criminal subculture and professes its values, but taking into account the fact that he behaved properly in a criminal institution, he should be given a chance.

⁶ The following considerations constitute a summary of the basic findings of the authors, previously presented in the publication: Jerzy Nikołajew, Konrad Burdziak, Michał Jankowski, Magdalena Kowalewska-Łukuć, 'Diagnostyka sądowo-kryminalna w orzekaniu i wykonywaniu warunkowego przedterminowego zwolnienia w teorii i praktyce sądowej – raport z badania' [2019], *Prawo w Działaniu* 39, 9-68.

Proper behavior in a criminal institution was taken into account by the courts most often (it accounted for over 42% of all the cited circumstances) and was most often the decisive factor for the courts (or at least one of the decisive factors) in granting conditional early release. Moreover, it was also the most accurately described. The above may raise doubts. V. Konarska-Wrzosek rightly points out that: "The behavior of the convict during serving the sentence is the last element of the assessment (from among those listed in Article 77 § 1 of the Penal Code – authors' note) for the court to assess the desired behavior after release from the criminal institution.

It is rightly pointed out in the doctrine and judicial practice that the correct behavior of a convict during his stay in a criminal institution and his compliance with the regulations, the established order and orders of persons authorized to issue them are the basic obligations of every convict (see Article 116 § 1 of the Polish Penal Enforcement Code), therefore they cannot be a sufficient basis for some particularly positive assessment of his behavior and for building a specific belief about the desired behavior after the release. It does not even entitle to the fact of receiving a prize or awards while serving a prison sentence. In order to find a positive prognosis for a given convict, it is necessary to proceed in a criminal institution that goes beyond the norm of passive compliance with the rules of stay and is characterized by active participation in the rehabilitation process, and acting with purpose to improve their functioning in society after the release"⁷.

Regardless of the above, it should be noted that the courts very rarely considered: 1) the circumstances of the offense and the behavior of the convict after committing it (despite the fact that it is a statutory requirement), these circumstances were considered only in approx. 6% of cases; 2) the personal characteristics of the convict (despite the fact that it is a statutory requirement), their health condition and addictions – these circumstances were taken into account only in approx. 11% of cases in terms of personal properties, in approx. 3% in terms of health, and in 25% when it comes to addictions; 3) personal conditions of the convict (despite the fact that it is a statutory requirement), these circumstances were taken into account only in approx. 35% of cases; 4) the attitude of the convict (despite the fact that it is a statutory requirement), this circumstance was taken into account only in about 56% of cases.

In other words – the procedures of the Polish courts in the context of making criminological prognoses for conditional early releases are not proper.

4. Tools for making criminological prognoses

The aforementioned problems in formulating a criminological prognosis of an offender under the Polish criminal law should lead to the search for new solutions in this area. One of them may be the use of capabilities of AI to make such prognoses. The first attempts in this manner can be observed in other countries, especially in the USA. It refers to the preparation and use of predictive tools based on algorithms in the judicial practice that are to replace the judicial authority in predictive activities. Proponents of such solutions point out that the tools in question lead primarily to relieving judges, speeding up criminal proceedings and basing court decisions on objective criteria⁸. However, there are also opponents of using them. Before analyzing the potential advantages and disadvantages of using algorithms in formulating a criminological prognosis, it is worth to look at at least one of the tools constructed on the basis of such algorithms and already used in judicial practice.

⁷ Violetta Konarska-Wrzosek, 'Komentarz do art. 77 k.k.' in: Violetta Konarska-Wrzosek (eds), *Kodeks karny. Komentarz*, (LEX 2018), <https://sip.lex.pl/#/commentary/587715702/570962> (accessed: 2.07.2021).

⁸ See Kamil Mamak, *Rewolucja cyfrowa a prawo karne*, (KIPK 2019) 106.

The objective of most of the tools in question is to determine the risk of recidivism of a given offender. However, the newest of them, a part of the so-called fourth generation of tools, combine the assessment of the risk of relapsing to crime with an indication of the areas of a person's behavior that require therapy or supervision⁹. The factors most often indicated as increasing the risk of recidivism are repeated antisocial behavior in the past, antisocial personality type, antisocial environment (including the closest people), family and / or marriage problems, problems at school and / or work, dysfunctional leisure time activities, and substance abuse¹⁰.

One of the most popular algorithm-based tools used in practice is COMPAS (Correctional Offender Management Profiling for Alternative Sanctions). In its basic version, COMPAS Core, this tool consists of two scales – risk scale and criminogenic needs. The results obtained on the risk scale allow for a 12-month prognosis in several areas – pretrial release risk, general recidivism, violent recidivism. The scale of criminogenic needs allows not only to estimate the risk of recidivism, but also to achieve the goals of the fourth generation tools, i.e. appropriate therapy and effective supervision of a given offender. This scale is based on information on many areas of the offender's behavior – both static, of a historical nature (e.g. conflicts with the law that previously occurred in the offender's family, his previous criminal record, and the use of probation measures), as well as of a dynamic nature (e.g. financial problems, manner of spending free time, permanent place of residence, abuse of psychoactive substances). Data on a given offender are obtained from the files of a given case, his conviction record, an interview conducted by a trained person and a lie-scale questionnaire filled in by the offender themselves.

The results obtained by a given offender in individual positions on a given scale have their weights. These weights are assigned based on LASSO₉ regression, logistic regression – to predict the probability of re-offending to happen depending on risk factors— and survival analysis – to predict the time until the next re-offending case¹¹. These terms, like the algorithm created with their help, say little to the lawyer. What may be important from the point of view of judicial practice using COMPAS is the fact that its accuracy, based on the validation studies, is quite well assessed.

It may therefore seem that COMPAS successfully prognose what it should, i.e. the risk of a given offender relapsing to crime, and identifies areas that require intervention – therapy or supervision. Some enthusiasm regarding its possibilities and tools similar to it may be seen in its term that has begun to be used to define court judgments with the use of predictive tools – evidence-based sentencing, in which evidence is meant by empirically verified factors affecting the offender's risk of recidivism¹². It is also indicated that predictive tools can increase efficiency, neutrality, honesty and transparency in the practice of criminal law judgments¹³.

⁹ See Sarah L. Desmarais, Jay P. Singh, *Risk Assessment Instruments Validated and Implemented in Correctional Settings in the United States* (2013) 5, <<https://csgjusticecenter.org/publications/risk-assessment-instruments-validated-and-implemented-in-correctional-settings-in-the-united-states/>> (accessed: 7.06.2021)

¹⁰ D. A. Andrews, James Bonta, J. Stephen Wormith, 'The Recent Past and Near Future of Risk and/or Need Assessment' (2006) 52 *Crime & Delinquency* 1, 7.

¹¹ Tim Brennan, Markus Breitenbach, William Dieterich, 'Towards an Explanatory Taxonomy of Adolescent Delinquents: Identifying Several Social-Psychological Profiles' (2008) 24 *Journal of Quantitative Criminology* 2, 179.

¹² See Sonja Starr, 'Evidence-Based Sentencing and the Scientific Rationalization of Discrimination' (2014) 66 *Stanford Law Review* 4, 805.

¹³ Chelsea Barabas, Karthik Dinakar, Joichi Ito, Madras Virza, Jonathan Zittrain, 'Interventions over Predictions: Reframing the Ethical Debate for Actuarial Risk Assessment' (2018), 81 *Journal of Machine Learning Research* 7 and Caoimhe Anderson, *The Impact of Algorithms in Criminal Sentencing on Due Process Rights*, Doctoral Thesis (2019) 9, <<https://pure.qub.ac.uk/en/studentTheses/the-impact-of-algorithms-in-criminal-sentencing-on-due-process-ri>> (accessed: 10.06.2021).

Nonetheless, there are also voices indicating that COMPAS and other analogous tools are characterized by prejudice, primarily on a racial basis¹⁴. Another objection is raised by assigning fairly high importance to the issue of gender (male gender is automatically associated with a higher risk of recidivism and aggressive behavior), work, education, or the age of the offender. For example, in Missouri's Information-Based Discretionary Sentencing System, with the same parameters in the other items of this tool, an unemployed offender who has not graduated from high school automatically receives 3 points less on a 16-point scale than a high school graduate with a job¹⁵.

On the basis of several cases where predictive tools were used, attention was also paid to the problem of their cultural sensitivity. The Supreme Court of Western Australia, considering the case of the Director of Public Prosecutions for Western Australia v. Mangolamara, concluded that the prediction tools used – Sexual Violence Risk-20 (SVR-20) and the Risk for Sexual Violence Protocol (RSVP) was not devised for and do not necessarily take account of the social circumstances of indigenous Australians in remote communities¹⁶.

It is also argued that the offenders who only receive information about the final assessment made by a given tool are not able to challenge it, as they do not know the algorithm, and thus the entire assessment mechanism¹⁷.

In the context of COMPAS, it also pointed out that: "Algorithms for predicting recidivism are commonly used to assess a criminal defendant's likelihood of committing a crime. These predictions are used in pretrial, parole, and sentencing decisions. Proponents of these systems argue that big data and advanced machine learning make these analyzes more accurate and less biased than humans. We show, however, that the widely used commercial risk assessment software COMPAS is no more accurate or fair than predictions made by people with little or no criminal justice expertise. In addition, despite COMPAS's collection of 137 features, the same accuracy can be achieved with a simple linear predictor with only two features"¹⁸.

Referring to the outlined hopes and fears related to the use of predictive tools in criminal law, it should be noted that due to the fact that they are already in use, the question of whether their use should be considered probably ought to be replaced with the question of how to use them, so that they can actually meet the objectives set for them, i.e. to relieve the courts of assessing the risk of recidivism and to objectify the decisions made in this regard. Implementing AI on a large-scale in the area of justice, as in many other areas of our lives, seems only a matter of time¹⁹. However, the challenge is certainly to indicate the conditions that should be met by predictive tools and the very procedure of their application²⁰.

¹⁴ See. Julia Angwin, Jeff Larson, Surya Mattu, Lauren Kirchner, *Machine Bias: There's software used across the country to predict future criminals. And it's biased against blacks*, (2016), <<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>> (accessed: 10.06.2021) and Barabas (n 13) 1.

¹⁵ See Starr (n 12) 813.

¹⁶ See Anderson (n 13) 36.

¹⁷ See Barabas (n 13) 1.

¹⁸ Julia Dressel, Hany Farid, 'The Accuracy, Fairness, and Limits of Predicting Recidivism' (2018), 4 *Science Advances* 1, 1, DOI: 10.1126/sciadv.aao5580.

¹⁹ See Serena Qattrocchio, 'An introduction to AI and criminal justice in Europe' (2019), 5 *Revista Brasileira de Direito Processual Penal* 3, 1521.

²⁰ Similarly, Mehdi Ghasemi et al., according to which: „Risk assessment in the digital era, use of artificial intelligence in criminal justice, and “smart prisons” are no longer the near future—they are the present. ML approaches are now making significant contributions to health care, not to mention business and entertainment, and there have been calls to build “fair algorithms” to assist criminal justice decision-making (Corbett-Davies & Goel, 2018). Recent preliminary findings suggest that although ML approaches can contribute meaningfully to risk assessment, management, and reduction, they should be developed with care. With smart, automated technologies advancing at “warp speed” (Wormith, 2017, p. 281), research and statistical methodologies must keep pace to support ethical, effective, and cost-efficient correctional practices; promote innovation in risk assessment and management; and ultimately, better, safer outcomes for criminal justice clients and communities” – Ghasemi (n 4) 536.

The FATE model that defines the basic features that should characterize every system using artificial intelligence – Fairness, Accountability, Transparency and Ethics – may be an indication for setting certain standards in the use of predictive tools in criminal proceedings. Fairness concerns the impartial, just and non-discriminatory way of treating people. Accountability means taking responsibility for the action taken. In the case of using predictive tools in judicial practice, the responsibility for the decision issued with the help of AI remains inherently connected with the adjudicating authority. Transparency means the greatest possible transparency of the mechanism of operation of a given tool, expressed for example in publishing the weights used by algorithms, scoring guidelines or the limitations and ethical challenges with which its creators had to deal with in order to improve the transparency of their models. At long last, the role of ethics is to decide whether given variables can be predictive²¹.

Referring also to the issues related to the fairness of predictive tools and the alleged bias and discrimination against minorities, it should be noted that there must always be some "input data" creating the algorithm. In short, only on the basis of some information a given tool can indicate a specific decision, just like a court adjudicating in a given case. When making a "traditional" prediction of the offender's behavior, we rely on certain variables related to the offender that we assign such a predictive value to. In a slightly simplified way, it can be said that a given algorithm, or a tool based on it, is as biased as its creator. It is probably important to be aware of entities that are to use a given tool based on which research sample it was developed, what variables have a prognostic value in it and what weights have been assigned to them. The implementation of the postulate related to transparency and ethics on the part of both creators and users of predictive tools translates into compliance with fairness requirements.

Thus, assuming the implementation of the postulates resulting from the FATE model, it seems as predictive tools may provide real support in judicial practice. Their application may actually translate into the acceleration and objectification of the criminal justice system.

Conclusions

As indicated above, predictive tools are already used in criminal law and, consequently, the question of whether their use should be considered ought to be replaced with the question of whether their use should be considered probably ought to be replaced with the question of how to use them, so that they can actually meet the objectives set for them, i.e. to relieve the courts of assessing the risk of recidivism and to objectify the decisions made in this regard. Implementing AI on a large-scale in the area of justice, as in many other areas of our lives, seems only a matter of time.

It should be emphasized that it is not about replacing courts (and judges) in making criminological prognoses. Quite the opposite – the authors believe that the human judges should decide on the possibility of, for example, granting conditional early release from serving the rest of the imprisonment sentence, based on a criminological prognosis made by them previously. It is only about providing human judges with tools that will allow them to make a criminological prognosis based on a larger number of premises and in a more objective way. Full objectivization does not seem fully desirable. Objective data, although best prepared and processed on the basis of the best algorithms, do not adequately reflect reality. In the end, they omit typically human issues – the current and, above all, the actual state of the criminal's psyche, the question of trust on the part of society, the question of the social sense of justice, but also the question of mercy – probably essential emotion in human relations.

²¹ See Olatz Cibrian Egido, *Artificial intelligence in criminal justice settings* (2020) 30 <https://addi.ehu.es/bitstream/handle/10810/48983/TFG_%20Cibrian%20Egido.pdf?sequence=2&isAllowed=y> (accessed: 14.06.2021)

Considering the above, the authors propose a wider use of predictive tools in European legal systems, and thus, start working on their preparation in international cooperation. However, the authors do not want to introduce a requirement to use such tools in the relevant legal acts of individual countries or supranational acts. The introduction of such a requirement could lead to the undesirable situation in which courts (human judges) would adopt the practice of taking the line of the least resistance and use the results of these tools as essential and, at the same time, sufficient arguments for or against adopting a criminological prognosis and granting (or not) conditional early release from serving the rest of the imprisonment sentence. Such a situation would be clearly undesirable.

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