When asked about the justifiability of implementing modern technologies and solutions in forensic practice, most people will probably answer in the affirmative. It is not surprising, after all, science does not stand still – over the last several decades we have witnessed an extraordinary technological revolution1. Rationalizing inventions have been significantly contributing to enormous changes in most spheres of human life. Forensic disciplines are not an exception.

On the one hand, extensive computerisation has contributed to the evolution of the modi operandi of perpetrators of some common crimes and the emergence of previously unknown forms of crime, on the other hand, created the need to create new areas of forensics, e.g. computer examination, and made it possible to improve investigative procedures, an excellent example of which are the innovative methods and tools used during crime scene examination, as well as AFIS and DNA databases. The development of forensics as a discipline of science which, as J. Widacki (2013) rightly states, is a conglomerate of several independent scientific fields, differing in terms of methodology and subject matter, but serving a common purpose, depends quite closely on the changes taking place in the modern world of science. Some scientists referring to this relationship name forensic science as “parasitic” (e.g. Krajewski, 2001). This view has lost its validity in the age of innovation and correlation of scientific disciplines (Buczyński, 2019). Forensic science both creatively adapts new methods and techniques to its own needs, and as a result of its own research process provides modernised, improved solutions and contributes to the development not only within the scope of its competences.

2 It is the reference of the third Industrial Revolution that commenced in 1950s and The Fourth Industrial Revolution (Industrie 4.0), whose beginning is conventionally dated back to the first decade of 21st century.

A certain obstacle for forensics in the context of its use of high technology is, paradoxically the same factor that gives sense to its existence and determines the need for its functioning – criminal proceedings. It is the courts that decide whether to admit evidence in the proceedings and, understandably, they are extremely cautious in this regard. Legal conservatism and the lack of trust in evidence based on modern technologies are associated with enormous responsibility resting on the judicial bodies. This approach does not seem to be
going to change any time soon. It is fully justified to say that although it seems natural for forensic science to benefit from the achievements of other disciplines, full adaptation of new technologies, inextricably linked with their admittance by the judicial bodies is not so obvious. On the contrary – it is a long-term process and its conclusion means fulfillment of a number of conditions, most of which are determined by the theory of law and forensic practice. In other words, new technologies provide new sources of knowing the truth, and the law due to various reasons reacts to them with a delay.

The monograph *New Technologies in Forensic Science. Legal and Forensic Aspects* by dr hab. Magdalena Zubańska is devoted to, among others, the issues mentioned above. At the beginning, it is worth emphasizing that the work is the first one that gives a comprehensive treatment of the application of progressive methods and tools in forensics. Literature of the subject is rich in numerous scientific articles, and the publishing market also offers multi-author monographs (e.g. Kwiatkowska-Wójcikiewicz et al., 2019; Hołyst et al., 2014), in which selected chapters are devoted to issues in the field of new technologies. However, these are publications in which the presented topic most often concerns one specific solution, and does not deal with the phenomenon of the presence of progressive methods and tools in forensics as a whole or do not exhaustively explain it.

As regards the title of the book, it can be assumed that the Authoress’s use of the adjective “new” as opposed to “modern” was deliberate and related to the aforementioned – to present the issue figuratively – a road full of bends, the beginning of which is marked by the creation of an innovative solution, and the end by including it in the arsenal of forensic technology and admission in a criminal trial. Traveling along this path often takes several years. Technologies introduced in forensic science long after than their pioneering application in other fields may therefore be referred to as “new”, but not “modern”.

The main research goal indicated by the Authoress was to construct a concept of activities in the field of forensics that would enable maximisation of their effectiveness in the conditions of a non-linear increase in the examination capacity of the 21st century technological potential (p. 18). The emergence of such a concept is desired by all those who use the resources of forensic knowledge in their work. For who would not like to know a recipe for effective work (limited in spite of everything, as evidenced by further reading of the book) guaranteeing the best conditions for the development of new methods and tools? In her work, M. Zubańska used three research methods: legal-dogmatic, existing data analysis and a diagnostic survey. The results of their application constitute the foundation of the concept of activities and the basis for the implementation of the assumed goal of the study.

The monograph is divided into five chapters, preceded by the Introductory Notes and a description of the methodology used, and concluded with the Summary and an extensive list of sources. The considerations begin with a historical approach to the development of forensics as a science and an analysis of the subject scope of this discipline. The part discussing the causes of changes taking place in forensics are particularly interesting. The Authoress analysed and summarised the global discussion that swept through the scientific and academia after the publication of a controversial article questioning the scientific foundations of some methods of forensic identification. Referring to the claims of the creator of the concept of “scientific paradigm” (T.S. Kuhn) and the polemics of theoreticians and practitioners of forensics, M. Zubańska aptly concludes that technological progress has a significant impact on the paradigm shift in this discipline. (pp. 43, 45), being an ally of both law enforcement agencies and criminals.

In the next chapter, readers will be introduced to the conceptual scope of “technique”, “technology”, “new technology” and “forensic trace”. In the definition of “forensic trace”, the Authoress draws attention to its evolutionary nature, conditioned by the continuous expansion of criminal activity areas, which in turn determines the emergence of new groups of traces.

According to literature of the subject technology and tactics intermingle within the forensic science (Kędzierska, 2011; Pikulski, 1997) and this mutual penetration also applies to technology, which was presented in an extremely interesting way by the Authoress using the example of combat organisation principles (Chapter II.3). She did not refrain from references to philosophy (pp. 69, 75), but the key observation is the strong dependence of the success of the actions of the belligerent parties (i.e. law enforcement authorities and crime) on the use of new methods and tools. It was clearly stated that the forensic science usually assumes the role of the defending party in the sense that it has to respond to insidious attacks by the perpetrators of crime, while it is among the expectations to succeed in keeping “one step” ahead of them (p. 189).

After presentation of terminology system and introduction to the issues of implementing modern technologies, the Authoress proceeds to defining the areas of their application in forensic examination. M. Zubańska made a division into methods and measures used during crime scene examination and forensic expert procedures. A separate part is devoted to the resources of forensic databases (mainly the AFIS system and DNA database) and to solutions...
facilitating the implementation of tasks related to recording technical and forensic procedures and controlling the chain of custody over evidential items. The said chapter describes not only the instruments already used by experts and specialists, but also those solutions that in the near future may be permanently incorporated in a wide range of forensic examination potential. The fact that several innovations resulting from research and development projects carried out by Polish scientific consortia are mentioned should be particularly encouraging. This confirms that our country is looking for ways to increase the scope of research opportunities, and the horizons of Polish forensics extend to such fields as nanotechnology and robotics.

The innovation review was conducted in a manner that deserves commendation and, taking into account so many trends in one publication is a demanding task, even for a person who most closely follows scientific reports in the field of forensics. However, it should be noted that most of the solutions presented in this part of the book are, unfortunately, not accompanied by information about the existing technological limitations that may make it difficult to obtain fully reliable evidence. Indicating the weaknesses of ultimately imperfect modern technologies would have allowed to obtain a fuller picture of the current state of knowledge and encourage the reader to reflect on still unsolved problems in forensics (Sygit, 2014).

In Chapter 4, titled “Requirements for applying new solutions in the forensic science” („Wymogi zastosowania nowych rozwiązań w kryminalistyce”) scientific reasoning focuses on legal, ethical and quality standards that must be met by the implemented methods and tools. This is an extremely valuable part of the book, containing an analysis of the criteria for the admissibility of scientific evidence deepened by a critical reflection on the ethical aspects of implementation of technological innovations into forensics. “Effectiveness cannot be the only criterion justifying change,” states M. Zubańska, and it is difficult to disagree with this view. He also adds that the pursuit of innovation is not always justified, and the risk balance must take into account both positive and negative effects of conceived actions (p. 155).

A lot of attention was paid to appropriate organisation of the forensic education system. It is obvious that the sufficient knowledge resources and their constant extending is of great importance for the effective application of science. This principle works in many areas of life. When writing about the system, the Authoress has in mind both education at the academic level and specialized training courses (e.g. for experts, prosecutors, judges). She also points to the necessity of self-development of each representative from the above-mentioned professional groups. The analysis shows that M. Zubańska is moderately critical about the level of education of process decision makers and her opinion is not unique (p. 201). She also points out numerous problems in the education of court experts from external specialist institutions (p. 206). Interestingly, in Poland there are more and more opportunities to partake in university education in this area. Suffice it to say that in 2019, Stanisław Staszic AGH University of Science and Technology launched recruitment for 1st year of “Modern Technologies in Forensic Science”, while the University of Warsaw, beginning from the academic year 2017/18 included the “Criminalistics and forensic science” course in its educational offer.

It is worth to mention carried out survey study, as it constitutes a valuable supplement to previous analyses and allow looking at the subject from a different perspective. The responses of the surveyed policemen, prosecutors, judges, as well as attorneys-at-law and legal advisers are generally not surprising, but the distribution of answers to the question about the activities, in which new forensic solutions particularly ought to be implemented is interesting. Actually, only 41% of policemen see such a need in the case of examinations performed in the scope of elaborating an expert’s opinion, while the vast majority of other groups of respondents are in favour. The result of these studies call for a continuation in order to determine the reasons for such responses among the policemen and the other surveyed professional groups. Subsequently, an analysis should be made with regard to the place and length of service (experience) of the respondents.

To conclude, Nowe technologie w kryminalistyce. Aspekty prawne i kryminalistyczne (New Technologies in Forensic Science. Legal and Forensic Aspects) is a compendium of knowledge on the application of up-to-date methods and solutions, both in the process of detecting and judging perpetrators of crimes. In her work, M. Zubańska decomposes the subject of research into prime factors, describes the role of new technologies in an extremely reliable and insightful manner, not limiting herself to the area of forensics, but often looking beyond that. The Authoress does not judge the implementation of methods and techniques solely through the prism of their utilitarian value, but apart from their potential she also perceives the risks, which are expressed in considerations on the verge of ethics, philosophy and law. The universality of the issues discussed, the high professional level as well as the clarity of composition and content of the reviewed publication make its reading highly recommendable to both the academic community and representatives of law enforcement agencies and the judiciary.

3 See: R&D projects in the area of forensic science implemented by the Central Forensic Laboratory of the Police: http://clkp.policja.pl/clk/badania-i-projekty/projekty-badawcze-real/w-toku [accessed on: 27 May, 2020].
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