



THE ROLE AND SIGNIFICANCE OF MODERN CRIMINOLOGY IN 21ST CENTURY GLOBAL SCIENCE

XXI ASRDA ZAMONAVIY KRIMINOLOGIYANING JAHON ILM-FANIDAGI O'RNI VA AHAMIYATI

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Abstract. This article analyzes the role, scientific status, and practical significance of modern criminology within the global scientific landscape of the 21st century. The study demonstrates that criminology has evolved beyond the scope of a discipline studying traditional theories of crime. Today, it is becoming a complex scientific field intrinsically linked to global security, social stability, crime prevention, digital threats, cybercrime, transnational and organized crime, artificial intelligence, big data analysis, and prognostic modeling. The article puts forward scientific perspectives and conclusions suggesting that in the 21st century, criminology is emerging not only as a field that studies the causes of crime, but also as a strategic scientific platform that serves to identify risks in advance, scientifically evaluate them, substantiate management decisions, and increase the effectiveness of prevention.

Keywords: modern criminology, global science, 21st century, role of criminology, significance of criminology, interdisciplinary approach, crime prevention, global security, cybercrime, transnational crime, artificial intelligence, big data, criminological forecasting, criminological diagnosis, innovative scientific approaches.

Annotatsiya. Mazkur maqolada XXI asr sharoitida zamonaviy kriminologiyaning jahon ilm-fani tizimidagi o'rnini, ilmiy maqomi va amaliy ahamiyati tahlil qilinadi. Tadqiqotda kriminologiyaning an'anaviy jinoyatchilik nazariyalarini o'rganuvchi fan doirasidan chiqib, bugungi kunda global xavfsizlik, ijtimoiy barqarorlik, huquqbuzarliklar profilaktikasi, raqamli tahdidlar, kiberjinoyatchilik, transmilliy va uyushgan jinoyatchilik, sun'iy intellekt, katta hajmdagi ma'lumotlar tahlili hamda prognostik modellash bilan chambarchas bog'liq bo'lgan kompleks ilmiy yo'nalishga aylanib borayotgani asoslab beriladi. Maqolada XXI asrda kriminologiya nafaqat jinoyatchilik sabablarini o'rganuvchi, balki xavflarni oldindan aniqlash, ularni ilmiy baholash, boshqaruv qarorlarini asoslash va profilaktika samaradorligini oshirishga xizmat qiluvchi strategik ilmiy platforma sifatida namoyon bo'layotgani haqidagi ilmiy qarash va xulosalar ilgari surilgan.

Kalit so'zlar: zamonaviy kriminologiya, jahon ilm-fani, XXI asr, kriminologiyaning o'rnini, kriminologiyaning ahamiyati, fanlararo yondashuv, jinoyatchilikni oldini olish, global xavfsizlik, kiberjinoyatchilik, transmilliy jinoyatchilik, sun'iy intellekt, katta hajmdagi ma'lumotlar, kriminologik prognoz, kriminologik diagnoz, innovatsion ilmiy yondashuvlar.



The 21st century has ushered in a completely new stage in the development of humanity. The primary characteristic of this stage is that nearly all spheres of societal life - politics, economics, law, education, culture, information exchange, and security systems - are undergoing a profound transformation. As a result of globalization, digitalization, the rapid development of artificial intelligence technologies, the expansion of transnational connections, and the seamless integration of virtual space with real social life, not only have the forms of human activity changed, but the very nature of social risks has also altered dramatically [1]. In such complex historical conditions, the phenomenon of crime is also moving beyond its classical form, taking on a multi-layered, adaptive, technological, and transboundary character. Consequently, the question of the role and significance of criminology, the science that studies this phenomenon, is becoming one of the most pressing issues in global science in the 21st century.

Whereas in previous periods criminology was interpreted as a relatively narrow, specialized field focused on studying the causes and conditions of crime, the personality of the offender, victimological factors, and preventive measures, today the discipline faces entirely new demands. Criminology can no longer remain a science that merely explains a crime after it has been committed or provides a general description based on statistical indicators. This is because modern threats - cybercrime, transnational organized crime, digital fraud and theft, the dissemination of extremist content through the virtual environment, the increasing complexity of financial crimes, risks associated with illegal migration, threats to data security, and algorithmic manipulation - demand a deeper, more responsive, and more integrative approach from criminology. In these circumstances, criminology is emerging not as a collection of classical theoretical knowledge, but as a strategic intellectual tool for identifying, forecasting, and managing risks based on scientific diagnosis.

One of the most important aspects of this situation is that modern criminology is becoming deeply integrated with several major branches of global science. Specifically, it is intrinsically linked with jurisprudence from the perspective of regulatory frameworks and criminal policy; with sociology from the perspective of the social environment and factors of deviant behavior; with psychology from the perspective of personality and criminal behavior; with statistics from the perspective of identifying trends and dynamics; and with information technology from the perspective of data processing, analysis, and forecasting. In today's academic landscape, it is precisely this interdisciplinary nature of criminology that solidifies its place within the system of world science [2]. This is because crime is no longer merely a legal problem, but a complex phenomenon at the intersection of social, technological, psychological, cultural, and geopolitical factors.

From this point of view, the role of modern criminology in world science manifests in two ways. Firstly, it forms a system of fundamental knowledge that serves to ensure social security. That is, criminology provides a deep scientific understanding of the nature, structure, spatio-temporal dynamics of crime, its latent and overt forms, subjects, and contributing factors. Secondly, it is not only an explanatory but also a practically-oriented science. In other words, this discipline serves as a theoretical and practical foundation for improving preventive mechanisms, assessing social risks, allocating relevant forces and resources in a targeted manner, providing a scientific basis for crime control policy, evaluating the effectiveness of measures aimed at improving the criminogenic situation in specific regions, and developing administrative decisions. In this sense, in the context of the 21st century, criminology is transcending its status as a purely theoretical science and strengthening its position as a strategic applied science.

However, a one-sidedly optimistic approach is insufficient when assessing the significance



of modern criminology in world science. As the field develops, its internal methodological and theoretical contradictions also deepen. For instance, there are many views that predictive models based on technological tools enhance the ability to anticipate crime. Yet, at the same time, there are serious academic debates about the objectivity of such systems, their algorithmic biases, their potential to reproduce social inequalities, and the negative consequences that could lead to individuals being assessed as "potential sources of danger." Therefore, the question of criminology's role in the 21st century should not be framed as simply "is it necessary or not?," but must be considered alongside questions such as "on what methodological basis? with what priority principles? and within what framework of scientific responsibility should it develop?"

Today, the importance of criminology in the development of world science is also defined by another crucial factor: it is one of the few disciplines that explains the complex balance between the security of the individual, society, and the state. The study of crime is, in fact, inextricably linked to the study of societal inequality, social injustice, governance shortcomings, legal loopholes, moral crises, digital illiteracy, economic pressures, the family environment, youth issues, and global security trends. Therefore, criminology is essential not only for understanding crime but also for understanding a society's internal stability, its security architecture, and threats to its future development. The scientific thought of the 21st century demands precisely such comprehensive approaches. This, in turn, requires viewing criminology not as a peripheral or auxiliary field within the scope of global science, but as one of the central social security sciences [3].

This issue holds particular importance for Uzbekistan and, in general, for nations entering a new stage of development. This is because, in the context of modern reforms, traditional administrative measures for combating crime

are proving to be insufficient. Fields such as crime prevention, targeted analysis, social diagnostics, assessment of regional risk levels, digital monitoring, and scientific forecasting are becoming increasingly significant. In this sense, determining the place of modern criminology in world science is not only relevant for national science and practice but also serves as a methodological foundation for regulatory, institutional, and administrative reforms. In particular, integrating criminological research with the education system, scientific centers, internal affairs bodies, the judicial and legal system, and digital governance platforms is one of today's priority tasks.

The purpose of this article is to scientifically analyze the role and significance of modern criminology within the system of world science in the 21st century, to reveal its interdisciplinary nature, to evaluate its theoretical and practical functions, and to identify its prospective development paths in the context of current global threats.

In the 21st century, the role of modern criminology in world science is defined by three main factors. Firstly, it is being transformed from a science that merely explains crime into one that proactively identifies and assesses risks. Secondly, it is significantly expanding its methodological potential through integration with other disciplines. Thirdly, it is increasingly becoming a crucial strategic platform for scientifically substantiating the security policies of the state and society. These aspects make modern criminology not only relevant but essential for world science in the 21st century.

Thus, the topic "The Role and Significance of Modern Criminology in World Science in the 21st Century" occupies a special place on today's scientific agenda, as it simultaneously encompasses issues of theory, methodology, practice, security, innovation, and interdisciplinary integration. By taking a scholarly approach to this complex yet exceptionally important issue, this article aims to reveal the true role



and historical mission of modern criminology in 21st-century world science.

Main part. To understand the role of modern criminology in the 21st century, it is first necessary to comprehend its internal transformation as a science. For a long time, criminology developed as a socio-legal science studying the causes and conditions of crime, the personality of the offender, victimological circumstances, and prevention factors. However, in the context of digitalization, the expansion of global communication networks, the popularization of artificial intelligence technologies, and the transnationalization of crime, this science is moving beyond its classical boundaries. Documents on crime prevention and criminal justice within the UN system also note that the digital age is fundamentally changing “crime prevention” and “criminal justice” systems. Therefore, modern criminology must now be interpreted not just as a discipline that explains crime, but as a strategic scientific platform that serves to anticipate, analyze, and manage complex risks [4].

The first important feature of this transformation is the interdisciplinary integration of criminology. At present, criminology is inseparable from jurisprudence, yet it cannot be confined solely within the framework of law. It intersects with sociology on factors of social environment and inequality, with psychology on behavioral motivation, with statistics on trends and dynamics, with data science on processing large volumes of data, with cybersecurity on digital threats, and with political science on security governance models [5]. Thus, 21st-century criminology is becoming not a “single science,” but rather a nexus where several scientific disciplines converge.

The second main aspect is the increasing complexity of modern criminology’s subject matter. Whereas crime was previously explained largely through territory, personality, environment, and social factors, today data, algorithms, platforms, digital identity, virtual connections, and cross-border networks have also

become full-fledged components of criminological analysis [6]. In addition to the question “why does crime occur?,” today’s criminology must also centralize the question “within which technological architecture is crime formed?”

The third important direction is the strengthening of the prognostic and analytical function. Criminology is no longer just a retrospective science, that is, one that draws conclusions by looking at the past. In modern conditions, it is also expected to perform tasks such as identifying risk indicators, detecting criminogenic trends at an early stage, identifying at-risk groups and vulnerable areas, and allocating resources on a scientific basis. OECD documents specifically note that within the framework of AI predictive policing, AI helps to identify risk based on historical data, but it assesses potential risk rather than the event itself [7;8].

The scientific significance of this approach is that it elevates criminology from the status of a merely explanatory science to that of a science that provides a scientific basis for managerial decisions. However, this also places a greater methodological responsibility on criminology: it is crucial not to confuse probability with reality, risk with accusation, or prediction with judgment.

The fourth aspect is the central role of modern criminology in the science of global security. Cybercrime, financial fraud, identity theft, digital exploitation, transnational criminal networks, and new threats emerging with the aid of AI are not confined to the territory of any single country [9]. For this reason, criminology today is important not only as a science that studies national crime, but also as one that develops the theoretical framework for global security, transnational governance, and international cooperation. It is difficult to provide a deep scientific foundation for modern security policy without criminology, as it is this very science that reveals the connections between the visible and hidden mechanisms of crime.



The fifth issue relates to the methodological renewal of modern criminology. For 21st-century world science, any discipline is valued not only by its subject matter but also by its methodology. In criminology, methodological renewal is particularly crucial: this includes statistical modeling, geo-criminological analysis, digital monitoring, network analysis, pattern recognition using artificial intelligence, and working with standardized crime statistics. The UNODC's International Classification of Crime for Statistical Purposes demonstrates the need for a common international classification of crime statistics [10]. Based on this approach, it can be argued that the prestige of modern criminology in world science largely depends on its data quality, comparability, and scientific verifiability. If data is fragmented, theory weakens; if theory weakens, prevention and management also falter.

At this point, it is necessary to highlight an important polemical aspect: the growing importance of modern criminology does not automatically render it a purely objective and technological science. On the contrary, as its influence grows, so do the ethical, legal, and methodological risks. Modern criminology may rely on technology, but it cannot abandon human rights, privacy, justice, and transparency [11]. It is precisely this balance - the balance between scientific effectiveness and social legitimacy - that is the most important criterion for 21st-century criminology. Therefore, the place of modern criminology in world science is manifested not only in its utility but also in its establishment as a responsible discipline.

Based on the analysis above, it becomes clear that the role of modern criminology in 21st-century world science is manifested in several directions:

- first, as a fundamental science that explains security and social stability;
- second, as an applied science that provides for crime forecasting and preventive management;

- third, as an interdisciplinary platform at the intersection of law, technology, sociology, and statistics;

- and fourth, as a conceptual science that provides a scientific interpretation of the complex balance between human rights and security.

Thus, the significance of modern criminology is immeasurable not only in the study of crime but also in shaping the security philosophy, management logic, and scientific thought of 21st-century society.

The research findings indicate that the role of modern criminology in 21st-century global science is primarily manifested in its transformation into an independent yet deeply integrated interdisciplinary scientific platform. Based on the sources studied, it has been determined that criminology today operates at the intersection of law, sociology, psychology, statistics, data science, artificial intelligence, and security management.

In the discussion, it is paramount to emphasize that the obtained results portray modern criminology not as a peripheral branch of global science, but as a central scientific discipline that unites issues of security, governance, and social stability. This is because the threats of the 21st century cannot be explained by simple linear logic: they are multi-faceted, dynamic, networked, and often transnational. Consequently, criminology, which studies such risks, naturally expands, deepens, and masters new scientific tools. This situation does not diminish the theoretical status of criminology; on the contrary, it transforms it into one of the most vital integrative fields of modern scientific thought.

Furthermore, the research results showed that the future development of modern criminology will largely be determined by three directions:

- first, in-depth, evidence-based analysis and standardization;
- second, a prognostic approach based on the scientific assessment of risks and potential threats;



- and third, ethical-legal oversight mechanisms that balance technological innovations with the principles of human rights and justice.

Only when this trio is harmonized will modern criminology preserve and strengthen its true strategic position in 21st-century global science.

In general, as a result of the discussion, the following overarching scientific conclusion can be drawn: in 21st-century global science, modern criminology is evolving from its traditional status as a field that explains crime into a comprehensive scientific system for understanding, forecasting, managing, and controlling risks [12]. Its significance lies precisely in this - it provides a theoretical, methodological, and practical foundation for analyzing the complex threats within the architecture of society, the state, and global security. In this sense, modern criminology today emerges not only as a relevant but also as a strategically essential science for the global scientific community.

Conclusions formulated as a result of the analysis.

The first scientific conclusion is that the current development of modern criminology is defined by its interdisciplinary nature. At present, this science is developing in close integration with law, sociology, psychology, statistics, data science, cybersecurity, and public administration. Therefore, the place of criminology in global science should now be assessed not as a narrowly specialized field, but as a foundational integrative science that explains complex social and technological threats.

The second scientific conclusion is that the object of criminological research has been qualitatively renewed in the 21st century. A necessity has arisen to study crime not only within the "person-environment-phenomenon" framework but also within the "data-algorithm-platform-network-risk" system. This has brought new phenomena such as cybercrime, data exploitation, transnational digital fraud, and plat-

form-based criminal networks to the forefront of criminological analysis. Consequently, modern criminology has become a crucial theoretical arena for global science, explaining a new generation of security threats.

As a third scientific conclusion, it should be noted that modern criminology is increasingly being shaped as a prognostic science. That is, it is not limited to merely interpreting crimes that have already occurred, but is also developing the scientific foundations to aid in the early identification of risk indicators, the assessment of regional and social vulnerabilities, the prediction of probable trends, and the targeted allocation of resources. However, this process does not imply that probability can be accepted as absolute truth; on the contrary, predictive tools should be employed as auxiliary, cautious, and human-supervised mechanisms.

The fourth scientific conclusion is that the practical effectiveness of modern criminology is strengthened by evidence-based approaches. A systematic analysis of the problem-oriented policing approach has shown a positive result, with a 34 percent overall reduction in crime and delinquency, confirming that this approach holds empirical rather than purely theoretical value. This is crucial for the future of criminology: it should rely not on general, slogan-based prevention, but on the principle of a specific problem, a specific place, a specific mechanism, and a specific measure.

The fifth scientific conclusion is that the scientific potential of criminology in the 21st century cannot be fully realized without a reliable and standardized database. For the purpose of crime statistics, defining incidents and acts as the primary units of classification serves to create comparable data between countries. Based on this, it can be said that the scientific power of future criminology will be demonstrated not only in the creation of new theories but also in the capacity to build, classify, and analyze a high-quality data infrastructure.



As a sixth scientific conclusion, it should be noted that along with the growing importance of modern criminology, its ethical and legal responsibility is also increasing. The prohibition of predictive policing practices based solely on profiling underscores the requirement that predictive approaches must be balanced with the principles of human rights, justice, transparency, and non-discrimination. Therefore, no matter how technologically advanced modern criminology becomes, it must not lose its humanistic and legal essence.

Based on the scientific conclusions above, the following practical proposals are put forward. First, it is advisable to develop modern criminology as an interdisciplinary scientific platform, consistent with its status in global science, by institutionally linking it with the fields of law, sociology, psychology, statistics, cybersecurity, and artificial intelligence research.

Second, it is necessary to establish a standardized statistical database for criminological research, in particular by more widely implementing international classification approaches such as the ICCS [13].

As a third proposal, when implementing prognostic and analytical tools, they must be used in conjunction with human oversight, ethical expert review, and legal guarantees.

Fourth, problem-oriented and evidence-based prevention models should be made a priority direction of criminological practice.

Fifth, to strengthen the strategic position of modern criminology in global science, it is necessary to develop it not only as an academic theory but also as an important mechanism for providing a scientific basis for decisions on state security, social stability, and governance.

In conclusion, the role and significance of modern criminology in global science have grown immeasurably in the 21st century. Today, it is not limited to being a science that explains crime; it has become a strategic field that scientifically substantiates risk forecasting, assessment, control, and preventive management. In this sense, modern criminology is not only relevant to global science but is also one of the foundational sciences necessary for understanding and managing the security of the future.

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