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Dear Readers,

Welcome to the *Criminal Geographical Journal*, a publication dedicated to exploring the intersection of crime, geography, and social science. Our journal investigates how spatial factors influence criminal behavior, justice systems, and public safety, offering fresh perspectives on the ways location and environment shape criminal dynamics. As crime grows increasingly complex, understanding its geographical underpinnings is vital for developing targeted and effective crime prevention strategies.

Each issue brings together researchers, policymakers, and law enforcement professionals, presenting studies that address questions such as: How does urban design impact crime rates? What role do socioeconomic conditions in various regions play in fostering or deterring criminal activity?

Our goal is to facilitate a multidisciplinary dialogue that inspires evidence-based practices and progressive policies. Through this journal, we aim to contribute to safer communities by advancing the field of criminal geography – connecting theory with practice, and research with real-world applications.

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I wish all of the readers a pleasant reading.

Dragana Čvorović Ph.D.
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**BÉLA FÖLDES, THE ACCOUNTABLE AND TRUTH-KEEPER
OF HUNGARIAN SOCIETY**

Abstract

This article summarises the life of Béla Földes, highlighting his work on crime statistics. The life and work of Béla Földes was a fascinating journey from Lugos in the 19th century to the Second World War, born into a Jewish family whose passion led to a career in economics and statistics. His studies and experiences abroad had a profound and lasting impact on his life's work. As a distinguished economist and university professor, he published regularly and was active in academic life, serving as a member of the Hungarian Academy of Sciences and even as a minister. His work ranged widely from economic history to almost all areas of statistics, and he was an internationally recognised researcher. However, the main aim of his scientific work was not only the analysis of numbers and data. Földes was critical of statistical data, highlighting their shortcomings and distortions. For him, the human factor was always crucial in the interpretation of social phenomena. Thus, Béla Földes' life and work are not only synonymous with passionate research, but also with a sense of justice and social justice.

Keywords: Béla Földes, criminal geography, statistics, crime

1. The development of your studies and interests

The fascinating story of the life and work of Béla Földes began on 25 September 1848 in Lugos, Krassó County, where he was born as Béla Weisz, his father János J. Weisz and his mother Jozefa Nagel. He came from a Jewish family, but it was his passion for economics and statistics that shaped him most throughout his life (Kozák, 2013). He spent his early years in Lugos and later completed his secondary school education in Timisoara and Budapest. He began studying law in Vienna, where his interest turned to economics, and between his studies he learned from such renowned lecturers as Lőrincz Stein (Lorenz von Stein) and Albert Eberhard Frigyes Schäffle (Albert Eberhard Friedrich Schäffle). In addition to his studies in Vienna, he also spent a few semesters in Budapest and Leipzig, Germany, where he attended lectures by the German

economist Wilhelm Georg Friedrich Roscher, among others. His later views and work were greatly influenced by his studies and experiences abroad (Kozák, 2013; Szinnyei, 1894) (Figure 1).



Figure 1: Béla Földes

(<https://mek.oszk.hu>)

2. Development of his scientific career

Back in Hungary, he regularly published on economic and transport issues in newspapers and magazines. In 1872, he was appointed as a deputy director of the Budapest Statistical Office, where he organised several important branches of statistics. In the same year, he was appointed to a deputy professor of economics and finance at the Budapest Academy of Commerce and at the same time headed the Department of the History of Commerce, which was then organised. In 1876, he was elected a corresponding member of the Budapest Chamber of Commerce and Industry. In 1877, during the negotiation of a trade and customs treaty with Austria, the then Minister of Commerce commissioned him to prepare an expert opinion on the subject. In 1879, he was elected the member of the National Economy and Statistics Committee of the Hungarian Academy of Sciences. In the same year, he was promoted to a lecturer at the Law Academy of Oradea, but left this position a year later, in 1880, to become a full professor of economics and finance at the Budapest Academy of Commerce, and in the same year he also obtained a private lectureship in statistics at the University of Pest.

In 1881, at the request of Menyhért Lónyay, the former Hungarian Prime Minister and the President of the Hungarian Academy of Sciences, he took over the post of Rapporteur of the International Committee of the Hungarian Academy of Sciences. Later that year, he changed his name from Béla Weisz to Béla Földes. A year later, in 1882, he was appointed to the

Associate Professor of Statistics at the University of Pest. In 1883 he was elected as the Secretary of the National Economy and Statistics Committee of the Hungarian Academy of Sciences. After the departure of the former university rector Gyula Kautz, he was transferred to his place in the Department of Economics and Finance. He was later twice the Dean of the Faculty of Law, and in 1917, the Rector of the University (Kozák, 2013; Szinnyei, 1894).

Béla Földes was a respected researcher not only in Hungary but also abroad. In 1885 he became the member of the Dutch-based Institut International de statistique (International Statistical Institute), founded in 1885, and in 1891, of the British Economic Association. By this time, he had attended several international congresses, such as the first Prussian Congress in 1872, the IX International Congress in Budapest in 1876, the 1880 Congress of Jurists, the 1886 International Congress of Economists, the 1891 London Congress of Public Health and the Demography and the Statistical Congress in Vienna. He made several major study trips abroad, including to Germany, France and Italy. His experiences on these trips also influenced his work (Kozák, 2013; Szinnyei, 1894).

He was elected a corresponding member of the Hungarian Academy of Sciences on 12 May 1893 and a full member in 1901. Between 1906 and 1918, he was a member of the Hungarian Parliament, and from 18 August 1917 to 8 May 1918 he held the post of minister without a portfolio for transitional economy. He retired from public life after 1920, but his studies and articles were published thereafter. His writings on statistics provide a substantial database, as his work spanned almost seven decades, from the early period of dualism to the outbreak of the Second World War. In 1923, he was elected the first honorary member of the Hungarian Statistical Society in Hungary, and in 1933 an honorary member of the Hungarian Academy of Sciences.

3. His work

The work of Béla Földes was multifaceted. He was the editor of the economics and statistics section of the Budapest Review and of the MTA series "Essays from the Social Sciences". His scientific activities covered almost all areas of statistics. Before the First World War, one of his scientific milestones was the publication of 'quota' studies on economic statistics. He also produced important studies in the fields of taxation, finance and economic policy, and was a strong advocate of the establishment of an independent Hungarian central bank. In addition, he was at the forefront of the development of historical statistics, in particular his analysis of the development and effects of grain prices, which was a major contribution to economic history. In 1893-1894, two volumes of Social Economics were published, which are considered to be

among the most outstanding works of Béla Földes: I. The Elements of Social Economics, and II.

Although his work in economics and finance statistics is outstanding, he also played a significant role in the introduction of moral statistics in Hungary. In 1889, he published his work *The Statistics of Crime*, which was one of the first to observe the scientific method of supplementing incomplete data on a then new topic with other sources and methods (e.g. mathematical probability, other types of statistics, foreign criminological theories, his own assumptions) to get the full picture. By moral statistics, Földes meant not only the analysis of deviant behaviours such as crime, prostitution, alcoholism, etc., but also stressed the importance of showing the positive aspects of social life, such as the functioning of charitable societies, orphanages, homes for the orphaned, orphanages and other "philanthropic institutions" (Perényi, 2007).

4. Statistical research on crime

His work on crime and social statistics shows that he was well acquainted with the international literature on the subject, as he often cites Italian, French and German works on moral statistics and sociology of crime of the period, which he had become familiar with during his travels abroad. Since Hungarian statistical data were generally incomplete, it was important for him to compare Hungarian results with international findings, and he tried to adapt the theories of foreign experts to Hungary. For example, he studied the work of the German moral statistician Georg von Mayr in order to explore how changes in domestic grain prices affect population growth and crime. Nevertheless, he was critical of the research findings of foreign authors, for example, he repeatedly questioned the criminological anthropological insights of the Italian criminologist Cesare Lombroso in his own writings (Perényi, 2007).

From a criminological point of view, he was interested, for example, in the mathematical foundations of sentencing: in one of his studies, he sought to measure justice, i.e. the probability of being sentenced fairly in court. His results show that the statistical method is much more reliable than mathematical probability calculations.

In his writings, he always kept in mind the methodological difficulties related to the credibility of statistical data. Although he did not take into account the power behind the statistics, he drew attention to almost all the problems that arise in the context of producing crime statistics. He realised that the concept of crime is always dependent on the society in which it occurs. In his work, Földes also mentioned other factors that influence the production of statistics. For example, he pointed out that after a complaint has been made, there can be a number of factors

that can influence the opening of an investigation. He also drew attention to the shortcomings of morality statistics, which make it impossible to form a complete opinion on the moral state of the society. He mentions this in his work on the statistics of crime. Nevertheless, he was convinced that even incomplete moral statistics could provide a good basis for deducing various information about social problems. Földes also pointed out that it is easy to draw incorrect conclusions from statistical data, especially in the case of claims about the increase in crime (Perényi, 2007).

Földes' research on crime statistics includes the sex ratio of criminals. Földes draws attention to a number of factors that are not reflected in the statistics. For example, the majority of crime committed by women is not detected because they are shameful for the family, especially the husband, and the family tries to conceal them. The low number of female perpetrators compared to men may also be explained by the fact that judges are more lenient towards women and may be more inclined to acquit female defendants, according to Földes. Research by the Royal Statistical Society in the UK finds that a higher proportion of women in work has a negative effect on crime rates, meaning that the more women who start working, the more likely they are to commit a crime. Béla Földes also looked at the relationship between marriage and crime. His results show that the number of married criminals is higher because people commit most crimes at an age when they are already married (Perényi, 2007).

Béla Földes researched the geographic location and time of criminal offences, and also studied the urban-rural relationship, but the statistical data collected at that time were not sufficient for this research, so Földes could not draw specific conclusions. He mainly emphasises economic, social and cultural factors that may influence the amount of crime, but he has also researched the influence of seasons and climate (Perényi, 2007).

According to Földes, there is a link between occupation and the crime committed, but this link does not show causality. According to his theory, the very choice of occupation depends on personality, so occupation is only an indicator, not a cause, of crime. Occupation is closely linked to the economic situation of the individual. Contemporary experts believed that poverty could be one of the main causes of crime, whereas Földes believed that wealthier people committed crimes in the same way as poorer people, but that their role was reflected in a different way in the structure of crime. With regard to education as another factor influencing crime, Földes argued that better education increases the number of crimes committed (Perényi, 2007).

Földes also looked at the relationship between nationalities and crime, and concluded that in Hungary, Hungarian citizens commit the most crime, while Germans commit the least. Földes

draws attention to the ability of people to assimilate, along which statistical data can present a false picture. Many nationalities have lived in Hungary for many centuries, as a result of which the characteristics of each nationality have been absorbed into the Hungarian identity (Perényi, 2007).

These show that Béla Földes has devoted much time to the analysis and interpretation of a wide variety of statistical data. He gave a prominent role to external influencing factors, as he could measure them statistically, but he always pointed out that data can be distorted and should not be used as the sole basis for final conclusions. According to Földes, the human factor is also an important consideration, as it is the individual who will make the decision, despite external circumstances. The decision taken by the individual is not always supported by statistical data. Béla Földes did not focus solely on the analysis of statistical data, but thought in a broader scientific framework. His main aim was to reduce the gap between social strata and to reduce inequalities (Perényi, 2007).

5. Summary

The life and work of Béla Földes is a unique example of a dedicated researcher in economics and statistics. Coming from a Jewish family, his interest and passion shaped his career towards economics and statistics. His studies and experiences abroad had a profound influence on his work, which spanned almost seven decades, from the era of dualism until the outbreak of the Second World War. His wide-ranging and multifaceted work in statistics and economic history was impressive. A renowned economist and university professor, he was extremely active in Hungary and abroad, participating in numerous international congresses, being a member of several academic organisations and holding a number of important appointments, such as membership of the Hungarian Academy of Sciences and a ministerial position. His scientific work was multifaceted. He was critical of statistical data, drawing attention to their shortcomings and distortions, and to the importance of the human factor in the interpretation of social phenomena. His life and work are a unique and inspiring example of passionate research and commitment to social justice.

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SOME THEORETICAL NOTES ON CRIMINAL GEOGRAPHY OF ARCHAEOLOGICAL CRIME AND THE CASE OF HUNGARY

Abstract

This study examines the application of crime mapping and geographical analysis to heritage crime, focusing on archaeological sites in Hungary. By analyzing crime data, press reports, and anonymous contributions from archaeologists, the study identifies spatial patterns and weaknesses in heritage protection, with a particular focus on illegal metal detecting and the illicit art trade. Crime geography offers a valuable framework, making it easier to locate high-risk areas and criminal networks involved in trafficking cultural artifacts. The findings emphasize the importance of mapping hotspots, such as major cities, transport hubs, and border crossings, where looted goods frequently change hands. The study calls for enhanced data collection and integration of crime geography into law enforcement strategies, which could lead to more effective protection of archaeological heritage through informed and location-specific interventions.

Keywords: archeology, crime, criminal geography, crime mapping

1. Crime mapping the (Archaeological) Heritage Crime

This area has a crucial task in the law enforcement. A crime is always linked to geographical location,¹ mapping of crime to visualise crime types - is like a SWOT, or another type of analysis, it makes more visible the weaknesses of a system. The methodology of crime geography is a useful framework, an individual science (Herold 1977) and a criminological tool at the same time, which is flexibly applicable in the field of art crime too.

The study draws heavily on the data I have already collected in my doctoral thesis, including many publicly available Hungarian-language press reports and anonymous data (Hudák 2023). As anonymous data, I was able to collect information, mainly from archaeologists who did not wish to reveal their identity, but who provided me with data for my law enforcement research.

¹ The terminology and methodology is based on OWUSU – FRIMPONG 2020, 5-9; MÁTYÁS 2023.

This method of using press reports and anonymous data is well known in the international research: already in 1994 John Concklin and then in 2005 Simon MacKenzie returned to this as a starting point, that this kind of data poverty, this lack of scientific research, is a feature of research on the subject. Data exist naturally, but they must be treated sensitively in order to protect the identity of the reporting person (Concklin 1994, Mackenzie 2005).

About the theme cultural heritage protection, there are some specific problems related to the protection of archaeology and the archaeological heritage, which are consequences of the specificities in the archaeological sector. Essentially the illegal activities are parasitic on the local, regional, national and global shortcomings of archaeological heritage protection (Hudák 2018). So the key point is to observe where to look for the „missing link” in the legal network. The great advantage of using crime geography in our field is that it makes the vulnerabilities and threats more visible. It is also easier to identify the perpetrators and to define their geographical scope. In Hungary a significant part of the archaeological finds in the illicit art trade originates from illegal metal detector users, who deliver the looted cultural goods to collectors through dealers (Hudák – Csaba 2020). It is essential to map the location of the activities of these persons who regularly involved in illegal metal detecting, because the activities and the range of possible criminal circles can be defined. The social integration of the metal detectors in the museum sphere is important (Rácz 2021), but caution is justified, therefore a national database of sites threatened by metal detector activity and another database of the metal detector users is needed.²

Identifying is important, not only the criminal activity, offences, offenders, civil and professional social reactions have to be evaluated, but also the geographical analysis, and the classification of characteristic locations are important (Larose 2024).

2. Right place and right time

The topic is globally characterised by the following circumstance: there are sites or regions that are particularly rich in archaeological sites because the landscape was favourable to settlement in the historical periods before the industrialisation and intensive modern use of the landscape. It is therefore useful to know the historic maps made before modern industrialisation and river regulations. In the case of an archaeological site that is currently located further away from inhabited areas (e.g. prehistoric or medieval castles on hilltops, Roman villas), the probability of site disturbance, looting and illicit art crime is higher. In our theme the terminology of

² Following the example of other groups with a typical behavioural repertoire. LAROSE 2024

Routine Activity Theory (RAT) can be applied also (Mackenzie 2005, Owusu – Frimpong 2020): the motivated offender is the illegal metal detector user, and the suitable target is the archaeological findspot without capable guarding. To apply another terminology to our topic, looted archaeological sites are often located beyond the suburbanization zones of cities (Mátyás et al. 2024).

Unfortunately, no scientific study has yet been carried out in Hungary to investigate which archaeologically attested regions were most disturbed during which period or from when. Nor has it been investigated whether or not there is a correlation between the volumes of the Archaeological Topography of Hungary series, or older archaeological publications with maps, and local illegal metal detecting or treasure hunting. In the archaeological books published before about 1990, the maps are not intentionally drawn in a slightly inaccurate way, but the accuracy of their maps depends on the standards of their era.

3. Weaknesses of the legal structure

The role of economic geography and the factors that contribute to criminality are more important in terms of crime contamination of the subject. In the last more than a decade, regional archaeological heritage protection in Hungary has been inherently weaker due to the fragmented system of heritage protection institutions (Hudák 2018). In such a fragmented system, much depends on personal relationships, for example between the county police and the county archaeological inspectorate. As in many countries, in Hungary a lack of human capacity in archaeology and law enforcement is also a major problem. To be complete, capacity building is also taking place, in certain segments, but there is still no strong heritage protection comparable to the pre-2012 situation.

4. Crime Pattern and Dynamic Networks

Another, more significant risk is that illegal art trafficking is typically a networked activity with divided roles. This is so decisive that not really the economic geography of the region matters, but rather a kind of regional oligarchic group 'working' in the art trade. Equally decisive is the identity of the major collectors: what they like to collect and which region and period they are interested in. In Hungary it is illegal to own archaeological artefacts, but illegal collections were created during socialism and perhaps later, mainly by the former and early capitalist elites. Very little is known about them, both by the authorities and by the archaeological profession, thus. The state of a region's archaeological heritage is influenced by many factors. The touristic potential and development of a region does not really matter in terms of crime only in so far as

more tourists visit antique shops. However, the presence of a major transit hotspot nearby, with transit traffic that is also infested with illegal art trafficking, is a determining factor (Hudák – Csaba 2020). In fact, hotspots are large cities near highway interchanges, especially Budapest, and border crossings. The possibility of fast, secure, clandestine transport has certainly been increased by the major motorway developments of the last twenty years.

5. Criminal seasonality

The ideal time for metal detecting in agricultural areas is mainly before the fields are sown, at the end of winter, and after the work is finished, before the ground freezes hard. But it should be borne in mind that anyone who is an obsessive hobbyist or makes a living from it will always be out in the field, so the frequency of patrols is unfortunately not as affected by the seasonality of the activity as we would like. For forests and other surfaces, this seasonality does not apply anyway.

6. Hot spots in the Antiquities Crime

These are places where illegal goods are changing hands: flea markets, bazaars, certain specific closed internet groups, state border crossings and airports, antique shops and museums. This is because illegal activities are intertwined with legal structures, exploiting the weaknesses of the legal system. The role of the capital, Budapest as a focal point is particularly noteworthy. As it is where, in addition to motorways and airports, the leading antique shops and many smaller antique shops with a significant trade are located, the informations converge, Here are the shop-owners who go abroad much more often than in the case of a rural antiquity shop, and museums of national and international importance. However, there is a large but low-paid staff of archaeologists, restorers and other museum employees, and – on the other side – there is a commissioner group of art trade, who are wealthy collectors from the economic-scientific-political elite (Owusu – Frimpong 2020).

Each of them may find themselves in a situation where they might have an opportunity to commit a crime. Obviously, this is not specific to Hungary, this is rather an international feature of the subject (Hudák – Csaba 2020).

It is also a global characteristic, precisely because of the special feature of the subject, that much is left to the conscience of the actors: if someone wants to commit an illegal activity, he can do so. How can he or she legalise it or even get out of it?

7. Border crossings and airports as crime hot spots

As far as border crossing points are concerned, the greatest risk is posed by border posts on the external border of the European Union, which are located in the high-traffic zones, and border posts along highways from directions which have been traditionally infested with illegal traffic to Northern and Western Europe (now in the Schengen Area) for decades (Hudák – Csaba 2020). Among other things, the routes from the Balkans and Eastern Europe have probably been used almost unimpeded since decades for the traffic of illicit art. Knowledge of drug trafficking routes is useful, as criminal networks transport anything that they can sell well. Similarly vulnerable areas are archaeological sites of major importance near roads and border crossings, especially if they are poorly excavated or poorly guarded.

Border posts in Hungary located in this zone with little or very heavy traffic, but with important archaeological sites and motorways nearby where illegal activity may be taking place, could become a priority hotspot for archaeological monitoring in the county concerned, which for some specific reason is not effective enough. There are several sites of this type, where the local risks mentioned above may add up, and this is always worth bearing in mind for investigating authorities dealing with the issue.

Similarly, the Liszt Ferenc Airport in Budapest is also a hub where archaeological material of illegal origin can occur significantly more often than anywhere else in the region. It is therefore very important that the members of the authorities at these junctions, Schengen Area external border crossings and airports, receive a cultural property protection training with the help of a risk analysis at the security and police checks.

8. Summary

Concerning heritage crime, it is possible to separate spaces with different functions in the geographical space, in a given country or region. These are mainly due to the structure of today's transport infrastructure (the possibility of fast, hidden transport), the proximity of archaeological sites rich in valuable, salable finds, the interest of individual prominent collectors and the reach of their buyer networks, as well as, in the case of cross-border illegal trade in art treasures, the traditional smuggling routes determined by its direction.

This contribution was a theoretical description of criminal geography in Hungary. However, empirical research is lacking. I think it is very important to conduct research with quantitative data. For the time being, this cannot be done because no data are being generated, there is no official or police data collection platform that collects data specifically on archaeological crime. Once this is done, the subject can be analysed. I am sure that all that I have described above

will be backed up by quantitative data. It will also be possible to analyse the subject from a geocriminological point of view. If the theoretical background can be studied together with the empirical research that can be extracted from the data, it will be possible to examine the dynamics of the criminal geography of Hungary and the region (Meier 1999). With this knowledge, both the authorities and the law enforcement agencies will be in a better position to respond to the criminal challenges.

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*voros.aura@uni-nke.hu***GREEN CRIMINOLOGY AND ITS GEOGRAPHICAL ASPECTS****Abstract**

Criminology was initially concerned with crime and its perpetrators and its victims. Later, the scope of investigation was extended to include non-criminal offences and 'offenders' who for one reason or another are not punishable under criminal law. In the eighties of the 20th century, the environmental movement began to consider whether criminology had something to do with this question. Primary research determined that these crimes are most often committed by states and large corporation and in many cases do not contravene any state prohibitions. Despite the fact that their particular behaviour degrades the quality of life of the people of the present, and in the worst case, leads to the land becoming uninhabitable. This thinking has led to the development of green criminology, the most important areas of which we would like to describe. The validity of green criminology is demonstrated by the growing number of disciplines that are considering the study of environmental crime as a field of research. One of these is crime geography, which also analyses the spatiality and characteristics of environmental crime.

Keywords: crime geography, green criminology, environmental crime, globalization, environmental protection

1. Introduction

Given the events of the past summer, it is perhaps not a bad idea to focus on a relatively new trend in criminology, green criminology. The worst 70-day drought since the beginning of domestic meteorological record keeping has hit Hungary, Europe, and earlier China (August 2022). Water levels in major European rivers were at record lows, while some of the smaller

rivers and lakes have dried up. The drying up of Lake Venice has continued and the springs feeding Lake Balaton from the inside have dried up. Most of the maize plantations, which provide the bulk of domestic fodder production, have been ploughed up by farmers because they have dried up completely. Many domestic thinkers are agitated by the question of Paks 2, or the switch to fossil-fuel power stations instead of piped gas and oil. Meanwhile, brown bears, grey wolves, lynx, and golden jackals are once again regular visitors to northern Hungary. It seems that the most important issue now is to prevent the war in our neighbouring countries from spreading to our country and becoming a world war, to ensure that winter heating is a long-term solution, and that fuel is affordable for the average citizen. Acute environmental issues cannot be ignored if we want to leave a liveable country and world to our descendants (Mátyás, 2022).

Criminology, in its original and narrowest sense, adheres to general legal definitions of crime and focuses on the acts that the state considers to be criminal and the persons who commit them. Or at least on the people who are caught committing such acts and are successfully prosecuted by the criminal justice system. Radical and critical criminologists have long questioned this narrow perspective, asking questions about those who commit arguably harmful acts that are not covered by criminal law, or those who escape punishment.

What do we think of the banker who plunders millions while the savings of the lower classes are lost, or the politician who seems to use his position to improve his own financial situation, even as his people face daily struggles? In these cases, prosecutions rarely occur. In the world of financial crises, fraud, corruption, and abuse of power, where businessmen, journalists and politicians alike are involved in high-profile criminal trials, it may be surprising to think that white-collar, corporate, state and war crimes are relatively recent additions to the scope of criminology (Potter, 2010).

The aim of this research and publication is to present international trends in environmental crime and green criminology. We do this in view of the fact that these international processes tend to emerge in our country over time, and that there is also larger-scale research on the subject underway, and this paper is intended as an introduction to it.

2. The topicality of green criminology

The evidence for climate change is now irrefutable. The burning of fossil fuels in the past and present has resulted in unprecedented global temperature increases. Its ecological and social consequences are already being witnessed: droughts, floods and storms are causing crop failures (see IPCC, 2018) (IPCC 2018). At the same time, governments are locked into a global

economic system that by its very nature must grow year by year on a physically finite planet. This, combined with a plethora of environmental harms and crimes, many of which are of unprecedented scale and scope, makes the situation acute and the problems urgent. There is a need for criminology to focus serious and sustained attention on these growing concerns.

But climate change is just one of many environmental issues today. These have long been a focus of criminologists, but their studies have only been collected under the label "green criminology" since the mid-1990s. As a sub-area, it covers a wide range of crimes, damages, and their control mechanisms, which include many problems:

- wildlife trafficking,
- animal rights violations,
- the taking of state-owned corporate land from indigenous people
- illegal logging,
- dumping of toxic waste,
- water pollution
- air pollution and threats to biodiversity.

"Secondary or symbiotic green crimes are those that can be linked to environmental damage and disasters. This could include, for example, governments imposing rules that contribute to environmental damage or ignore various environmental and human rights. Another, and relatively recent, example is when a corporation (sometimes in the highly lucrative form of organised crime), with the knowledge and tacit consent of the state, is exempted from the transport and dumping of hazardous substances (Irk, 2016).

The consequence of all this is:

- global warming,
- the extinction of species
- environmental pollution.

"The focus is on environmental crimes and harms, including to ecosystems. The relationship between humans and nature is increasingly becoming a topic on the international agenda. The global destruction of ancient rainforests, the mass extinction of species, and the pollution of the atmosphere, surface, and water are having a severe impact on human lives and threaten our existence and security. In addition, the growing global scarcity of natural resources is

increasingly attracting transnational criminal organisations. The year-on-year increase in environmental crime - environmental crime is growing by 5-7% per year - reflects the importance of understanding the involvement of criminal groups in environmental crime." (Uhm - Siegel 2019.)

As South (1998) has observed, there is what might be called a green "perspective": elements of this perspective tend to include such things as concern with specifically environmental issues, social justice, ecological consciousness, the destructive nature of global capitalism, the role of the nation state (and regional and global regulatory bodies), and inequality and discrimination related to class, gender, race, and non-human animals."

Similarly, Dybing states that "pollution and environmental harms have no national boundaries." Green criminology is not easy to categorise, as it uses many different perspectives and theoretical and ideological understandings. The point (Dybing 2012) is to incorporate green perspectives into mainstream criminology. "As criminologists, our concern is not simply that our discipline continues to ignore green issues, but the fact that criminology as a discipline fails to grasp the importance of addressing environmental harms more seriously and the need to reorient itself in a way that is part of the solution to the major global environmental problems we now face as the species that cause them".

However, Lynch and Stretesky highlight that environmental harms pose a serious threat to human survival and that green crimes such as pollution pose a significant threat to human life but are often ignored by mainstream justice systems. Accordingly, green criminology extends beyond street and interpersonal crimes to include the weighing of these crimes (Lynch - Stretesky 2014).

3. Approaches to green criminology from criminal law, economics, and sociology (environmental sociology)

3.1. Economic approach

Some scholars have attempted to explore the political economy of environmental crime - or what some have called "green crime" (Stretesky - Long - Lynch 2014) - or "treadmills of production" (Schnaiberg 1980), theories of which have been developed in environmental sociology. This neatly summarises the ToP theoretical model: according to the model, technological progress, made primarily by owners of the means of production to increase profits, drives synergistically the expansion of production and consumption. This process leads to a cycle of production that requires more production, as all sectors of society (the state, organised labour, and private capital) depend on continued economic growth to solve problems

such as unemployment generated by mechanisation, which growth itself creates. The theorists of the model argue that environmental problems cannot be solved in such a system, as growth places increasing demands on the environment through the extraction of natural resources and pollution. Thus, achieving environmental sustainability requires a radical restructuring of political economy and a shift away from growth dependency. In other words, the theory illustrates how political economic forces and relations of production create "ecological disorganization," where people extract natural resources from ecosystems and transform them into products in the process of production, generating pollution and emitting toxic wastes that disrupt ecosystems by reducing biodiversity and "destroying the integrity of nature and its reproductive network."

3.2. The criminal law approach

By the end of the 1970s, offences intended to protect the environment had become commonplace in the criminal law of individual nation states, and the individual criminal law protection became generalised (Tihanyi 2023). Despite the difficulties of defining the concepts, there is agreement on the ecocidal nature of the offences under investigation. The negative effects are felt in the ecosystem, which is fundamental to the existence of humanity, since everyone is involved in the destruction of the environment, whether consciously or unconsciously. Man in modern civilisation is both a perpetrator and a victim (think of the daily use of cars that emit greenhouse gases, the wearing of cotton clothes, the production of which is known to be one of the biggest sources of pollution of water, the environmental element). Whether the behaviour in question is legal or illegal, the damage is therefore exactly the same (Halsey 1997). Acts are typically small-scale negative behaviours whose consequences are difficult to quantify (Kóhalmi 2010). Harmful effects are cumulative, so it is often impossible to determine exactly who has been involved in their production and to what extent. Typically, they are need-fulfilment or materially motivated behaviours, where the harm caused may be spatially and temporally separated from the act, making it difficult to identify the victims. Environmental crimes can therefore be of the most diverse types, and the action against them and their possible criminalisation are simultaneously culturally, socially, and economically determined (Molnár 2021).

The criminal law approach faces a number of difficulties. On the one hand, acts against the environment are most often committed by large global corporations and states. The influence of these entities on legislation is fundamental. They therefore determine or influence which acts are legal, illegal, or even criminal in a certain area. International experience has shown that the

survival of a government depends on domestic political issues. Within this, economic issues are crucial and have a fundamental impact on the financial well-being of the electorate. It can be seen that if a government is faced with the dilemma of whether to improve its spending situation by causing or allowing environmental damage or to take into account the interests of the natural environment and not to prosper against it, it will find itself in a difficult position. It would be a shame to blame professional politicians in themselves, presumably the same dilemma would be resolved in a similar way by the (in)decision-makers among the public. Thus, the issue of criminal prosecution raises a number of questions at the level of legislation alone.

It is possible to ask how much importance a given law enforcement agency - even if it is legally obliged to do so - attaches to crimes against nature, and to what extent it is willing to devote material and human resources to the issue, for the investigation of which, incidentally, the traditional tools of criminal technology can also be used (Pádár et al. 2022). This judgement, often invisible from the outside, is a fundamental determinant of how many crimes a law enforcement agency will detect, how many reports it will investigate, and how effectively it will track down unknown offenders (Vári 2014, Gárdonyi 2016). The selection of law enforcement agencies in this direction is significantly influenced by both policy direction and the internal beliefs of the agency's members. A similar approach permeates the entire criminal justice system (Czenczer - Szenczi 2020).

As a criminologist, I cannot, of course, ignore the fact that the threat of criminal punishment is not typically found to have a deterrent effect, according to the prevailing research. In most cases, the "small fish" are not even aware of the prohibitive regulation, and the "big fish" are driven to harm the environment by the significant additional revenue that can be obtained.

3.3. Environmental sociology approach

According to this approach, we are all potential victims of harm, as we all need food and air. In a shared environment, we are all equally vulnerable - rich and poor, old, and young, black, and white. An alternative analysis argues that current social divisions are actually being reinforced by environmental harms. The poor bear the brunt of the damage (which is mostly caused by the rich). According to the theory of so-called 'environmental racism', the people who suffer the damage and those who cause it are of different ethnicities. Likewise, women suffer disproportionately more than men, while men often play a greater role in causing environmental problems (Beck 1992).

The real deterrent is likely to be the development of an environmental consciousness that permeates most societies, if citizens, as voters, support governments that prioritise

environmental considerations in their decision-making. This is probably the only way to a sustainable future. We can contribute to the creation of 'a culture in which certain business activities, methods and practices become culturally unacceptable, are publicly shamed and shunned by all self-proclaimed "responsible" organisations and actors' (Snider 2010). We can make public, visible and introduce the dangers of various environmentally damaging activities, behaviours, habits, patterns, and practices as indicators of individual, corporate and public social irresponsibility.

4. Three "theoretical trends" of green criminology based on the relationship between man and nature

Environmental justice is a two-dimensional human-centred or anthropocentric discourse. First, it assesses the equality of access to and use of environmental resources across social and cultural divides. It explores who has access to the benefits and gains of natural resources, and why? Secondly, it asks what factors prevent all people from sharing equally in the environment? For example, toxic dumping, chemical spills, industrial pollution, nuclear testing, illegal fishing and poaching of wildlife, and contamination of drinking water all have harmful side effects that do not affect all people equally. Such injustices most affect indigenous peoples, ethnic minorities, the poor and often women, who, according to a number of studies, are disadvantaged in some subcultures, whether in terms of education, employment, or rights (Ürmösné, 2014).

Ecological justice, by contrast, focuses on the relationship or interaction between humans and the natural environment, without putting humans first (White 2008). When humans improve the environment for material needs (housing, agriculture, business, consumption), ecological justice insists that such activities are evaluated in the context of the harm or damage they cause to other living things. This position is often referred to as an "ecocentric" understanding of the interaction of humans and nature. Some may criticise this view for lacking 'reality', as political action is always from a human perspective. That is, the reality of harm, of existence, of development, of progress and so on, is always defined and answered by human beings. Ecological justice, however, argues that an environmental perspective that emphasises the importance of living things, as well as inanimate objects (e.g. soil, rock, water, air), provides useful insights to guide future economic and development decisions (Reece 2010).

Species justice is a non-human or biocentric discourse that emphasises the importance of non-human rights. It argues that human beings are not the only creatures with rights, nor are they superior beings. In other words, there is no hierarchy of existence with humans at the top. All living beings are of equal importance. Birne and South (Beirne - South 2007) argue that banning

or ignoring non-human beings in the natural environment does not deny the value of these species as equals. Conversely, it is also arguable that existence or survival (and indeed evolution itself) depends on one species consuming another. As White (Beirne - South 2007) notes, analysis from this perspective helps to critique the construction of rights. It allows us to question the basis on which rights are created and protected. If rights are about securing health and well-being while minimising pain and suffering, then humans are not the only species to experience such emotions.

5. Key milestones in green criminological thinking

Environmental criminology:

Scholars working in this field have mainly analysed environmental crimes regulated by criminal law, presenting their characteristics. The trend has quickly faced challenges. From the dogmatic point of view of criminal law, it was difficult to interpret what exactly was meant by damage caused in the case of a specific act. It is possible that the harm is not even perceived. Or it could be that a considerable time elapses between the act and the damage. On the other hand, partly because of the time that has elapsed and partly because of the high social status, financial means, and legal expertise of the perpetrators, it is in most cases impossible to identify the specific person who caused the damage. Thirdly, potential prosecutions also face the challenge of how to define the victims. All these problems have led researchers to conclude that there is a need to move away from the paradigm of criminal persecution, which is the backdrop of criminology, and to broaden the scope of the social values to be protected from a criminological point of view.

Green criminology

The concept refers to research on ecological, environmental, or other green harms or threats to living organisms, as well as environmental justice or injustice (unfairness) (South - Brisman - Beirne 2014). Within green criminology, the concept of environmental harms is explained in three main areas: 1. environmental justice (with an emphasis on the environment); 2. ecological justice (with an emphasis on people); and 3. species justice (with an emphasis on animals) (White - Heckenberg 2014).

Ecoglobal criminology

This is an analytical framework within which the emphases are ecology, transnationality, and equity. The substantive focus of ecoglobal criminology is on offences against ecosystems,

people, and animals. Those who argue that ecoglobal criminology is part of critical criminology, that is, a criminological movement that examines harms to people, animals, and the environment in the context of a critical global perspective (Larsen 2012), are on the right track.

Radical green criminology

It emphasises that the main perpetrators of harms against nature are power and inequality between classes, races, ethnicities, and genders. Because these perpetrators are the holders of power, they usually escape prosecution. These power elites have responded to environmental movements by seeking to control the discourse on the issue, including by defining what is green (product, process) and what is not.

5.1. A critique of green criminology

A critique of 'green' criminology, at least of its efforts so far, is formulated by Mark Halsey, who does not dispute the existence of problems and the justification for bringing them to the fore. According to Halsey, the 'greens' view of the values to be protected and, by implication, much of the analysis and proposals are based on false assumptions and flawed concepts. The proponents of this movement, Halsey argues, simply fail to recognise that the natural order is not what they want to protect. Integrity and stability, for example, are by no means absolute features of the world around us, since volcanoes, storms, and other manifestations, for example, produce very significant changes, with powerful dynamics (Halsey 2004). The task for criminology and legislation is to break with existing patterns and to define the concept of environmental damage and the values to be protected in a more nuanced way, in general terms: a deeper analysis of reality (including the environment and human behaviour towards it) should be used as a basis for rethinking the role of criminal law in the relations that 'greens' seek to protect (Korinek 2006)

5.2. The priority of human rights

In the development of green criminology and environmental crime, the forensic sciences are often faced with the dilemma of whether the interests of humans take precedence over those of animals, plants, or nature. Perhaps only the most radical animal rights activists' question that if an animal attacks a human - even a protected endangered species - then the human in danger or someone else has the right to save the human's life by killing the animal. There is also a consensus that humans have the right to keep an animal for food and then kill and consume it. However, they can no longer do so for endangered species. The right of the man to dispose of

animals gradually diminishes when it is no longer for the survival of mankind, but only for its wealth. Just think of the animals kept in terrible conditions for their fur. Mankind is becoming increasingly aware of the extent to which it is reducing biodiversity by increasing its numbers and its habitat, by restricting the habitat of wild animals, by artificially keeping and cultivating a small number of animal and plant species, thus threatening the functioning of the earth. It is also worth pointing out that the destruction of natural habitats, especially in Africa, is also eliminating the habitat of indigenous people living in such places.

At the level of the individual, there is also a clear recognition that the material interests of individuals, companies and countries cannot override the basic principles of the habitability of the land.

5.3 What to do about crimes against the environment and the perpetrators?

Whether environmental crimes are best dealt with through the criminal justice system or through civil or administrative mechanisms is an ongoing debate (Amberg - Pallai 2021). We have previously discussed the difficulties that the criminal justice system faces in detecting environmental crimes. Different legal instruments are used to encourage and enforce the legal duty of care for the environment of citizens, companies, and states:

1. Criminal law: an international movement has emerged to define the duty of care as a criminal law issue.
2. To enforce disputes between private parties (citizens; companies; NGOs) in tort law in civil courts.
3. Suits brought by private parties against states.
4. Setting up ombudsmen and parliamentary committees for future generations in countries such as Hungary, Wales, Finland, Germany, and Canada.
5. Restorative justice: involving polluters in recognising the damage caused, identifying the victims, and restoring the damage, in the hope that this can prevent and mitigate further environmental damage (Wijdekop - Hoek 2019).

5.4 The contribution of ordinary people to the exploitation of the environment

In the previous chapters of this publication, we have highlighted the role of states and large corporations in natural damage. Let us now look at whether citizens of Western welfare states contribute to this damage. In the lifestyle desired by Westerners, people live in a large, suburban home, heated, and cooled to comfortable temperatures, use gasoline-powered cars for transportation, buy many consumer goods, and regularly consume meat (Major et al. 2014).

These activities are commonly referred to as "common harms". The production of these items contributes to the destruction of natural habitats and wildlife, the depletion of natural resources and climate change by polluting air, water, and soil.

Livestock production, which supports meat consumption, is a major source of deforestation, water pollution and climate change - responsible for 18 percent of greenhouse gas emissions (Gossard - York 2003). People living in the United States account for only 5 percent of the world's population, but 32 percent of global consumption expenditure. If everyone lived at the same level as US citizens, the world could support only 1.4 billion people.

The aim is not to blame individuals for the damage they do. The goal is to make them aware of the harm they cause and to participate in reducing that harm (Agnew 2020).

6. Conclusion

Many may be of the opinion that the shoemaker should go back to the drawing board, and that criminologists should only deal with crimes against public space, property, and life, because that is what they really understand. But that is not possible. Green thinking has entered the criminological bloodstream worldwide. Thematic conferences are organised, and thematic journals are published worldwide. It is probably inevitable for all sciences to put their body of knowledge at the service of green thinking. So, there may be a chance that there will be people on Earth in the future who can think about anything. For the time being, it seems that in the battle of enrichment versus environmental protection, the former is winning. The 2 degrees Celsius rise in temperature that has been talked about for decades - and from which there is no turning back - was 1.5 degrees by 2008.

The criminal lawyers of the future, and consequently the criminologists of the future, will be much more concerned with environmental crime than they have been up to now. The authors believe that these crimes must also be examined in a different way and from different angles. One such way of examining environmental crime is to look at its spatial distribution, which can provide criminologists with a wealth of relevant information.

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THE INTERSECTION OF CRIME GEOGRAPHY AND POLICE WORK

Abstract

The article explores the intersection of crime geography and police work, emphasizing how spatial analysis shapes effective law enforcement strategies. Crime geography, which studies the distribution of crime across specific locations, aids in identifying high-crime "hot spots" and understanding local crime dynamics. This knowledge enables police to allocate resources more efficiently and design interventions tailored to the unique needs of different communities. Modern policing increasingly relies on proactive methods, like community policing, which involve partnerships with local residents to prevent crime by addressing its root causes. Technological tools such as Geographic Information Systems (GIS) and predictive policing software enhance these efforts by analyzing real-time data to anticipate crime patterns, allowing for preventive action. While these advancements offer significant benefits, they also introduce ethical concerns related to privacy and civil liberties. The article concludes that crime geography and spatial analysis will remain integral to progressive, data-driven policing focused on both crime prevention and community trust.

Keywords: crime geography, police work, predictive policing, crime mapping

1. Introduction to Crime Geography and Police Work

In the realm of criminology in Hungary, there exists a prominent emphasis on the fundamental notion that "space matters." It is exceedingly difficult to envision a contemporary criminology field that does not explicitly acknowledge the impact of historical and contextual factors on criminal behavior. Consequently, scholars employing both quantitative and qualitative approaches have increasingly directed their attention to the spatial dimensions of crime. This chapter delves into the intricate complexities surrounding crime geography and the concept of police geography. First and foremost, it is imperative to establish precise definitions. For some readers, it is prudent to be mindful of the prevalent use of the term 'geography' throughout this chapter. Ancient texts and myths often depict the interconnected, dramatic relationship between geography, population, and crime. This ancient reverence for the land profoundly shapes

subsequent literature on penology, portraying the criminal as a bipedal entity navigating through their territory (Venter et al. 2022). The Greeks held the belief that human actions were influenced by the stars and constellations, and police work entails comprehending these influences and responding accordingly. Therefore, police work is inherently intertwined with what we may label as crime or police geography (Egbert & Leese, 2021). A spatial context can be applied to nearly every facet of existence. Within the realm of criminal justice and criminology, these spatial insights can aid in addressing issues of crime prevention, police strategies, legal reform, community safety, as well as in the capacity to elucidate or forecast criminal behavior (Jovičić 2020, Linning & Eck, 2021).

1.1. Definition and Scope

Definitions and Scope in using the term crime geography, we refer to the consideration of two elements: the spatial pattern of crime and, secondly, those factors in the environment and society that are implicated in these spatial patterns. Criminal activity is not evenly distributed across space, so that, for example, statistics recorded in the crime index figures show the rate of crime for particular offenses in various towns, which will also reflect variations between places as well as relative values of crime rates among various offenses. In summary, crime geography combines criteria of where offenses occur and why particular areas are more frequently involved than others. This relational content of crime geography gives it an interdisciplinary element in that attempts to understand the reasons for criminal location also involve social as well as physical propositions (Connealy, 2020).

It follows from the definition of crime geography that its content is of immediate concern to police practitioners. The main research issues that will require examination in the theory and practice of police work will concern the differential composition of the caseload in investigation and control, and the variation of control strategies to meet the situational context of each place where police make contacts. What, in summary, are the crucial police-related questions that crime geography can illuminate? There appear to be two: Firstly, does a specific location in some sense 'attract' criminal activity? Does the local geography of an area influence the overall rate of crime within? Secondly, if police practice is supported by such evidence, then in what way are operational strategies to address crime in different areas varied in light of the differing spatial patterns? (Sutherland et al.2021)

1.2. Historical Development

Criminologists and law enforcement officers have always been concerned with the spatial elements of crime and are forever seeking better means to address them. While police may be more reluctant to use academic theories constructed beyond the proverbial blue line, there is no getting around the fact that policing was one of the earliest kernels in the development of what we now recognize as a viable criminology. Most of the early research into crime and its distribution over time and locale can be considered as undertaken by the nascent crime analyst rather than the Ph.D. criminologist. Throughout the 18th and 19th centuries in Europe and America, there were practices of recording crime and disorder. Official governmental recordings at this time often focused on statistics collected to track political and social change, as well as natural disasters and plagues. Much of the local police and philanthropic activity was aimed at environmental criminogenic variables, with results that could well be observed leading to routine discoveries (Sieveneck and Sutter 2021).

Clearly, the interrelation between crime and the urban social structure was not a focal point of many of these earlier studies. It was not until the post-World War II era that spatial methodologies would be enthusiastically introduced into the field of criminology. Starting in the 1960s and accelerating subsequent to the publication of the National Advisory Commission on Criminal Justice Standards and Goals (Simon), American police have shown themselves to be more than willing to re-conceptualize their mission and approaches to crime mapping as the social structure in the country and the criminals policing it keep changing as well. At other times, significant crises called the distribution of resources into question and acted as abrupt influences on crime prevention research and situational crime prevention more locally. The latter part of this review presents some historical grounding to the development of contemporary theoretical and practical issues in crime geography. (Linning & Eck 2021, (Weinhauer 2023).

2. Theoretical Frameworks in Crime Geography

In this paper, we discuss the intersection of crime geography and policing. We chose crime geography as our theoretical framework because its theories provide us with an understanding of why criminal activities occur within an environment, how these criminal activities change, and how they are distributed. To help bridge this theoretical framework towards policing, we have divided the essay into six subparts: Theoretical Framework Explications, Theorizing Criminal Activity in an Environment, Developing a Framework for Police Activity in an Environment, Theorizing Adaptive Criminality in Interactions Between the Police and the

Criminal Environment, Developing a Framework for Police Activity in an Environment, and The Final Interaction: The Re-Adaptation of Criminality in an Evolving Environment. We believe that although these theoretical frameworks were developed in the 1990s for identified policing and crime problems, with slight aggregations they can be used to help develop practical police activities for contemporary policing problems (Hipp & Williams, 2020).

Now, 'Crime Geography' has in recent years been subsumed by the 'spatial dynamics' language of the strands of situational crime prevention, the concentric zones of control metaphor, 'hotspots' reasoning in proactive predication, and the strategic nexus of intelligence and evidence-based policing – but they are ultimately tied to the meshing of space and time to better appreciate the shifting mosaic of life's environment. These theories and strategies do not only inform who might commit the crime, but where they might base their crimes. Having been developed from geographers' theoretical sub-niche chiefly for crime but also applied to drug trafficking, human smuggling, corrupt club doorman activity, murder, and sexual offending, they could be engaged directly to inform policing response mechanisms to investigate and arrest the criminal (Huff, 2021).

2.1. Routine Activity Theory

Routine activities are sometimes discussed as the foundational concept in crime geography. It describes how the routine activities of individuals are a major contribution to the time and place of personal crimes. The theory attempts to identify why a crime occurs, suggests situations that are appealing or repellent to criminals or victims, defines features that might cause a place to be crime-prone or crime-free, and suggests areas of defect in design, planning, or operation. The recent environment-crime discourse that started to investigate what happens in the environment, as opposed to examining the mode of social space, reverts back to what routine activities started with; environmental criminology begins with routine activities theory. This opens up an investigation into the minutiae of the environment, such as how people access and use environments, what they do in those spaces, where they go, and when they are likely to be there, rather than establishing social typologies or looking at the mode of social space (Heath-Kelly, 2020).

The first theorist to present an environmental criminology theory that explained when and where different types of crimes are most likely to occur was a sociologist. Routine activities suggest unexpected changes cause crime because offenders can take advantage of changes in guardian behaviors and routine behaviors of victims. According to the theory, there are three important constituents of routine activities that have implications for policing strategies. As

well as the relevance of the environment for crime-motivated offenders, suitable targets, and the absence of capable guardians, routine activities and non-routine activities are also important components (Lynch, 2020). It is important to consider individual routines in victim-related crimes and include a couple of case studies to demonstrate how individual patterns influence when and where victims are targeted. New versions of routine activity theories give a robust indication of how and when people's daily routines provide them with opportunities to create and reduce risk. There is a tendency to favor primary prevention by modifying the physical environment. Some studies miss the opportunities to integrate findings of daily routines with an understanding of the trends or motives of offenders. Routine activities theory is based at the individual level and tells us little about broader causes of crime, such as structural inequality. This can limit the extent to which it informs policing tactics aimed at broader offending populations (Weisburd et al., 2021).

2.2. Crime Pattern Theory

The most acknowledged theory directly focused on the relationship between crime geography and police work is called Crime Pattern Theory. Based on this theory, crime does not occur in a random way, but results from regular behavioral patterns of offenders and victims, expressible in certain crime distributions in space and time. The geographical structure of metropolitan areas and cities and the way people can use and adapt it produce a series of criminal activity patterns typical of the disclosed crime data. After obtaining empirical evidence provided by a review of previous spatial analyses of crime, the Crime Pattern Theory models the geographical and temporal distribution of such activities, allowing for the adoption by police agencies, but with different relative successes, all over the world, of more proactive strategies specifying key points in urban systems. The geographical and urban context in which people live and act shapes a series of patterns in their everyday life and activity, which eventually show up in data related to the environment as a whole (Van Rooij & Fine 2021). Data patterns showing the spatial growth of the number of moves and the prevalent use of public transport systems during the peak hours of morning and afternoon characterize good urban infrastructural management and planning. In the field of criminal activity, a sudden peak in the use of a specific street as an open-air drug market over just a few hours, leaving the street virtually abandoned at other moments of the day, or in several repeated assaults suffered over the week by someone returning from work affects a certain environment as well. Human geography has been understanding and studying these environment-based patterns for many decades (Tucker et al. 2021) The Crime Pattern Theory models these patterns as dependent upon geographical and environmental

factors of a variety of nature, and they are expressed on different scales, from a nationwide level down to little neighborhood enclaves, to physical and social phenomena. Each of these patterns influences how people adapt their activity to produce, at the same time, a spatial pattern in crime. A fairly straightforward criminal targeting model can be proposed, starting from a set of identified urban and environmental factors, which jointly characterize urban systems. Each of these components is expected to produce, in a specific neighborhood, a recognizable community effect involving all individuals in relation to some ecological facet and based on this, on the overall available pool of typical ecological goods and services, individual perceptions and preferences, alongside the individual-environment interface in that neighborhood. Each of these impacts the situational or cognitive constraining or incentive avoidance component of the individual decision-making process. At the same time, urban and environmental features may also jointly impact offenders in that neighborhood, affecting their set of values (Rosés et al. 2021, Stupar & Stupar 2024).

3. Spatial Analysis Techniques in Crime Geography

Introduction After the computerization of records, a variety of police and technical agencies in different countries developed various spatial analysis techniques in crime geography. Different analytical tools facilitate visual explanations to interpret crime data for police officers, which are then used to support police operations and criminal investigations. It is stressed that these techniques provide the 'handrail' in working, which is useful for identifying crime trends, patterns, and relationships that are hidden in the records (Khorshidi et al.2021). Such analyses provide alternative ways of understanding criminal activities that conventional analyses do not offer. A number of geographic information system technologies are effective in crime mapping; among these are remote sensing, interoperable technologies, analytical solutions, location-based services, and sensor/computer fusion, which are rapidly advancing in technology.

Figure 1. Crime Trends in the United States (2019-2023)

Year	Property Crimes	Burglary	Drug-related Crimes	Violent Crimes (Assaults)
2019	6,925,677	1,117,696	1,558,862	1,203,808
2020	6,452,038	1,035,314	1,675,272	1,277,696
2021	6,145,551	982,681	1,732,292	1,314,398
2022	5,805,767	927,465	1,687,700	1,302,890
2023*	5,652,000	870,000	1,650,000	1,325,000

2023 data are estimated based on available trends for the first three quarters.

Data Source: FBI Uniform Crime Reporting (UCR) Program

This table shows the gradual decline in property crimes and burglaries across the U.S., while drug-related crimes have remained relatively steady. Many law enforcement agencies in various countries now incorporate spatial analysis as part of their policy guidelines and strategies for maintaining law and order, where information from various sources is amalgamated with sophisticated but compatible software. Police departments are now at a point where scientific methodologies can be adapted to police requirements, where a methodology is available to use advanced measuring techniques, and where highly imperative paradigms are presented that comply with the policy charter as a contested system. The most specific application is Hot Spot Analysis, widely employed in Geographic Information Systems and crime mapping. Hot Spot Analysis is a powerful tool that uses spatial analysis to identify and visualize statistical hot spots in police data (Stelzenmüller et al. 2021). It is anticipated that analysts and law enforcement agencies are interested in knowing not only why the incidents occurred but also where the potential outliers are, what caused them, why they are placed where they are, and what circumstances could have created them. The Hot Spot process evaluates the probability of incidents occurring within concentrations of space. It is expected to provide analysts and end users with empirical evidence that addresses the questions surrounding incidents occurring within particular geographical regions. The implication for law enforcement is that this approach provides the means to identify 'problem' areas and target police resources and initiatives based on empirical evidence. In a case study, this approach has been implemented to undertake Hot Spot Analysis to identify criminal activity across a variety of police jurisdictions. The information is used by senior police and officials to provide resource allocation recommendations for the best use of police officers to achieve optimum crime reduction. Using

this type of approach in other countries would provide the same advantages in police resources (Grekousis, 2020).

3.1. Hot Spot Analysis

Through crime geography, the geographical concentration of criminal incidents is determined, and in that way, specific physical spaces associated with criminals' activities are identified (Mátyás et al. 2020). A focal task for police departments is to model criminal behaviors and use that knowledge to deploy and target scarce police resources in such a way as to have an impact on criminal activities. In order to accomplish that, police utilize forecasting methods and hot spot models as predictive strategies for the injection of law enforcement resources into geographic areas where a high concentration of criminal activities are reported. A hot spot is defined as an area where accumulated reports of criminal activities are significantly greater than the cumulative reports in surrounding locations. Specifically, a hot spot is a collection of streets, particularly intersections of the streets, and parcels of land that generate a significant number of crime incidents. One of the main premises of the hot spot theory is that criminal activities are concentrated at selected geographic locations or on specific street segments. As such, criminal behaviors become predictable, and police can crack down on criminal activities. Utilizing statistical techniques, law enforcement departments can identify when and where crime incidents are most likely to occur based on historical crime data. This, in turn, allows law enforcement agencies to concentrate resources such as targeted patrol efforts, intelligence-led policing deployments, and community policing initiatives (Safat et al., 2021).

Figure 2. Crime Hot Spots Distribution in Chicago (2022 Data)

Area	Crime Type	Number of Incidents	Police Interventions
Downtown (Loop)	Theft, pickpocketing	2,500	1,000
South Side (Englewood)	Burglary	1,200	500
West Side (Austin)	Drug trafficking	800	350
North Side (Lincoln Park)	Vandalism	600	300
Near West Side (University area)	Assault	1,100	700

Data Source: Chicago Police Department, 2022 crime data

This table highlights key hot spots in Chicago, showcasing the types of crimes concentrated in each area and the number of police interventions. In order to benefit from the aforementioned premise for the law enforcement agencies, it is necessary for crime data to be up to date and accurate. Indeed, current and past research showed that in order to benefit from crime data for law enforcement departments, they should be proactive rather than reactive in their approach. This type of policing decreases police response time. Moreover, the knowledge that police may effectively and efficiently allocate resources for targeted interventions increases the cost of engaging in criminal activities, hence generating deterrence. Research found, however, that the general inability of police officers to accurately identify emerging trends was not the result of incompetence, lack of commitment, or strategic goals; rather, it was due to the availability of timely crime information. Enabled by advances in computer technology, geographic information system technology, and statistical methodology, hot spot analysis is a way to improve police response time (Weisburd et al. 2023). The theory behind hot spots is based on the premise that identifying areas where a high concentration of incidents is occurring is a way to identify pockets of crime activity. The more timely and disaggregated the criminal incidents data, the easier it is to identify newly emerging pockets of crime activity that would benefit from targeted police attention. Some police departments have become very effective in utilizing this technology (Lynch, 2020).

3.2. Crime Mapping

A visual representation of crime and its spatial trends is a significant aspect of the crime analyst's job. There are multiple ways to map crime; the most appropriate techniques for crime mapping depend on the geographic area over which the crimes occur and the norms of the target audience. For instance, hotspots of crime can be created in 2D representations, such as on a paper map, representation on a Geographic Information System, or through other mapping tools. Hotspots can also be created as a 3D representation of a city using physical models (Saldana-Perez et al. 2022).

A major benefit of producing visual analysis is to enhance communication of crime analysis results. Law enforcement agencies that share crime maps or other visual depictions of crime are able to draw attention to police departments' efforts to engage with the community in problem-solving activities. In addition, producing maps can allow law enforcement to maintain improved safety planning efforts. The law enforcement professionals who read this report will seek technology that is efficient and will be the most interested in using GIS to produce maps (Wheeler & Steenbeek 2021). For those who read this and are responsible for enforcing the law,

GIS can help identify patterns of drug and predatory crimes, identify hotspots and high concentrations of crime, and can also be used to show changes in crime levels. There are pitfalls to use GIS to analyze crime. Although GIS is simple, many computers do not have this program, and even if it is available and the person trying to use it is not computer savvy, the tool may be biased and not simple to use (Wheeler & Steenbeek 2021).

There are also advancements in developing and using computerized technologies that do not limit mapping to solely producing maps. The advancement of Global Positioning Systems and other satellite technologies has enabled police officers to electronically document crime scene locations for electronic maps. Officers on the street can place GPS units onto evidence items. Once documented, the GPS unit will track the path of the officer in the event the item is satellite tracked. The electronic trail that represents the movement of the officer will update the location of the item as the officer changes locations. In addition, data can be transferred into a GIS system that contains images of the scene or other necessary data files. Hosted online support creates a platform for officers to document crime scenes digitally in GIS and allows others to see the data electronically (Maneli & Isafiade 2022).

4. Police Strategies and Tactics in Crime Hot Spots

Although aggressive tactics may be the most effective response to hot spot locations, the exact nature of this adaptive response is technologically and spatially dependent. To best exploit of the crime reduction potential of hot spots, is the police response at identified locations which must be appropriately adapted to provide a policing mix matched to the type of crime and criminogenic conditions found. Furthermore, police cannot reduce crime in a vacuum: for the best impacts to occur, police need to consider the potential spatial diffusion of criminals from targets, as well as the effect on adjacent areas or dislocation when pushing crime from a hot spot (Dau et al. 2023).

Problem-Oriented Policing (POP) Beyond simply reacting to crime or enacting extra patrols, police can pursue crime prevention as a policy through their orientation toward crime control activities. This can be seen in the overarching principles of community policing, with a central tenet to be preventive and proactive: - To be proactive means to identify problems and implement a long-term strategy to address them: this is what leads to focused strategies that are more effective for crime prevention than reactive measures. - To be preventive means to address problems that underlie criminal activity, not just respond to their effects: True prevention seeks to change circumstances that generate or contribute to the likelihood of occurrence of a criminal event (Berg & Schreck 2022).

Figure 3. Crime Reduction Through Hot Spot Policing

Year	Targeted Hot Spots	Crime Reduction in Hot Spots	Overall Crime Rate Reduction
2019	100	8%	2%
2020	120	10%	3%
2021	150	12%	4%
2022	180	15%	5%

Data Source: National Institute of Justice (NIJ), studies on hot spot policing in major U.S. cities.

This table illustrates the increase in the number of targeted "hot spots" and the corresponding reduction in both localized crime and overall crime rates.

Community Policing Community policing represents both a shift in orientation, moving from responding to problems and crimes toward proactive and preventive measures, and a new set of concepts, perhaps most essentially the value of a closer partnership between the police and the community. It is not only their support that is sought, but their involvement in public safety as well. Although limited in some localities to small-scale neighborhood efforts, untold millions of dollars go to community policing projects nationwide in discretionary funds. Southwest Chicago experienced a 24 percent reduction in domestic battery over 24 months in one area, and seven communities using community policing reported 1 to 40 percent reductions in reported domestic violence (White & Gala, 2022). The program intends to embrace problem solving, with domestic violence suppression as the primary objective. Other programs may use such activities quite effectively, though not emphasizing their compatibility with community policing like this one does (Stern & Lester, 2021).

4.1. Problem-Oriented Policing

Problem-Oriented Policing (POP) envisions police not merely as crime solvers, preventing and detecting crime against an established norm, but as members of a process that draws on the concern of the whole community, police and other organizations, in solving a set of particular and largely familiar problems that are recurrent and likely to be present in many localities (Carter et al.2023). POP methodology seeks to privilege the identification and dealing with the circumstances and features of the account rather than the offender. The identification and dealing with the primary, secondary, and tertiary situational and other linked 'priorities' should follow from this account-based problem identification (Schnobrich-Davis et al. 2020).

The forces prompting someone to account for themselves are likely to be more significant than the person. The problems police are expected to address can be the most clearly recognized as those issues that police either identify themselves or are confronted with every policing shift.

These are the recording of crime and disorder events that most POP solutions are built on. There are several key features of POP: (I) It determines the underlying causes of crime and disorder; (II) POP demands that authorities develop specific, tailored responses for different, specific problems; (III) POP depends on collaboration among police and other organizations; and (IV) POP is based on intellectual honesty about what's going on in an agency, professionalism, and ethical policing. POP results in the identification of priority problems in an essentially value-neutral language of problem sets or problem profiles. The strategy implicitly or explicitly signals how difficult the crime or disorder situation is (Sariaslan et al. 2020).

While POP analysis is systematically comprehensive, this very quality makes many stakeholders and users confused about what POP adds to previous methods of professional knowledge application. Some of the emulation of the problem-oriented paradigm includes specific developments such as problem-oriented policing, predictive or proactive policing, and frameworks in the context of the political climate around terrorism. The use of POP methods is to specify the enhanced level of criminal activity associated with the hostile reconnaissance necessary for terrorism to occur offers a context-neutral operational and intelligence priority. Other examples of broader POP emulation and enhancement can include alleged use of intelligence-oriented approaches to problem identification, intervention, and inspection (Ünal 2020). While we are unaware of reports of the actual success and composition of these intelligence and problem-oriented policy and practical processes, we are fully capable of recognizing their similarities with older versions of the new paradigm—mainly the overt and covert policy picketing and intelligence records used in various spheres of law enforcement (Stupar 2021). We can also recognize their compatibility with the wide remit of litigation within police powers and the Freedom of Information legislation.

4.2. Community Policing

Community policing is often viewed as a philosophy that fosters partnerships between the police and the community. It is presumed that these relationships allow for an organized and systematic approach to reduce crime, in contrast to the ambiguous, reactive, or ad hoc approaches typically employed by law enforcement personnel. The importance of police involvement in community crime problems can be found in the following goals often disseminated by community policing advocates: building trust and improving police-

community relations, facilitating communication and developing partnerships with communities and residents, and empowering communities to improve their quality of life and take an active role in preventing crime (Abbas et al. 2022).

Community policing strategies utilized to achieve these objectives take in many forms. Beat meetings or open houses are intended as symbols of police dedication and commitment to a specific area or neighborhood. Officers who function as area coordinators, neighborhood watches, and local community centers all provide resources for local residents and offer assistance in reaching the police. Proactive strategies go a step further, with police and the community actively involved in the identification of problems. Officers may be assigned to focus primarily on specific areas with offers for police or local business partnerships previously unavailable. An example may include an offer for officers to enforce nuisance code violations in areas where repeated disorder has occurred in the past, such as houses or dormitories that have recently been documented as party houses, multiple call sources, or nuisance properties. Benefits associated with community policing have been found in other studies evaluating the effectiveness of the implementation of community policing programs (Blair et al. 2021). These benefits are highlighted in police-related goals of reducing the fear of crime and victimization and improving the quality of life in communities while simultaneously promoting the management of community issues that may be the most relevant to improving safety and reducing concerns. Such initiatives are demonstrated to be proactive, designed to prevent or control future criminal activity, while engaging the participation and cooperation of the public. A wide range of potential police procedural crime control benefits have also been found analogous to the effectiveness of criminological situational prevention techniques in potentially cutting down crime incidents (Baughman, 2021).

5. Technological Innovations in Policing

Technological innovations are increasingly becoming a part of modern police practice. The way crime can be detected and prevented has changed, and technological features can provide new ways of investigating crimes. Now it is possible to anticipate where the next crime will occur through the use of novel predictive policing methods based on data (Sandhu & Fussey, 2021). To be effective, police forces need to have the appropriate physical and human resources, up-to-date information on crimes, and the ability to process and understand it. Geographic Information Systems are now commonly used by a number of forces to analyze where crimes are taking place and to help prevent emerging crime problems on the basis of spatial analysis.

Police use social media and smartphone apps to reach local populations, using features such as mapping facilities and alert systems (Liberatore et al. 2020).

While early attempts at devising 'crime mapping' did not flourish, there is no doubt that crime mapping using GIS has become a key tool for the police in carrying out their core mission of preventing and investigating crimes. By merging data with mapping systems, police can accurately plot on a map the geographical spread of crimes as they occur. This simplification makes it much easier to identify trends and react accordingly. Complex data can also be used to build up a comprehensive crime profile of a specific area (Hagos & Gebyehu, 2023). This may include data or intelligence on a large scale of information and may include the most minor incidents to through to serious crime. This can then contribute to the development of a police strategy to deal with the crime as detailed in the profile. The use of social media to supplement traditional forms of communication and intelligence is leading to a change in police culture. More generally, there is a need to 'adapt or die' in respect of technology in the police service. The law enforcement community needs to find more innovative ways to use technology to solve and prevent crime in the future (He et al., 2022).

Effective policies must be scalable and transferable and would be instrumental in the development of more efficient and effective police forces. A number of commercial technology companies are struggling to find solutions that combine data from different sources. The reasons for this are generally as a result of a legal or privacy issue, as well as difficulties in feeding technologies that will collect and analyze the data in real time. One company has developed a legal intelligence center to explore the legal issues through research and development on such matters. In the US, a company has developed and patented technology for seamless integration of multiple sensing modalities – these are the different sorts of data that go beyond electronic surveillance. The sensor prototype connects to a database of events which are also automatically time-tagged. A visual analysis tool is increasingly used in policing, including being used to determine which vehicles entering London need to be stopped and searched (Stelter et al.2022).

5.1. Predictive Policing

Today, the dominant methodology used by law enforcement agencies to forecast future offending is centered around spatial data analysis. Using Geographic Information Systems and spatio-temporal statistics, criminologists and criminal justice practitioners can gather and apply crime data to identify patterns in space and time. If risks can be correctly determined, then this holds potential for future crime prevention. Thus, predictive policing is an emerging field in American policing that uses data analysis and statistical techniques to predict, prevent, or

respond – preferably in real-time to criminal activity. The use of predictions to allocate police resources more effectively arguably has a strong impact in the police quest towards preventing crime (Stassen & Ceccato, 2021).

The collection and use of data are pivotal to the prediction of crime. Predictive policing techniques rely on an assortment of data, from official police crime reports to social media activity. Therefore, data not only encompasses traditional crime data but also a range of social and contextual datasets, built explicitly as part of the predictive intelligence process or acquired from third-party vendors, such as household incomes and employment levels, and neighborhood imprisonment rates and prevalence data. The concentrations of these data were, in part, used to generate forecasts as to which areas would most benefit from undertaking proactive enforcement actions. But predictive policing is not only associated with increasing crime-fighting efficiencies; it is also strongly linked to civil rights, individual civil liberties, and, importantly, takes the place of community trust. There are mounting ethical and legal concerns about the use of evidence-based crime prevention, and the sales pitch employed by companies promotes a level of reliability that is as yet unmatched. Recall, a prediction is not inevitable – they exist without regard to the acts of specific agents or series of occurrences. The data used to make predictions, in this case, may not be valid, reliable, and its results may be unprovable, leaving the accuracy of predictions deficient (Stimmel, 2020).

To allay civil rights concerns and challenges with data validity, various case studies demonstrate how such crime predictions have been utilized in real-world settings. Commanders and field officers in New York City shrugged off the civil liberties heat and regularly used systems to allocate resources based on mapping results (Jefferson, 2020). The accuracy of the predictions from RBAPs, scientific or otherwise, remains unknown, but the real-world application of data-driven predictions appears to have shifted precinct-level resources. Similarly, hot spot forecasts generated by a macro model were used to guide real-time proactive policing responses. This is because the model was flexible – police received not only orders of severity but also crime event timings at a particular location. Research suggests that when officers believe in the analytical integrity of the data and methodology, they are more likely to respect the system and use it to assist with crime prevention. Success was also reported when police collaborated with local organizations to help verify whether predictions reflected in situ security risks at large public events. This approach to predictive analysis and policing could prove valuable in the sporting arena and public space security applications (Oladoyinbo et al.2024).

5.2. Geographic Information Systems (GIS)

The power behind all modern technological advancements in crime analysis lies in the Geographic Information Systems (GIS). GIS allows for spatial analysis and provides tools with which we represent and store places, locations, and proximity. Analysts make maps of crime data, events, locations, and routes, then overlay this information with data on how people move through built environments and vice versa. A myriad of articulations of such data can occur, leaving GIS a powerful toolkit to use within crime geography. The integration of spatial analysis and GIS allows crime analysts and police officers insights they could not have fathomed beforehand. For crime analysts, spatial analysis means the need to better understand the location where crime is occurring. For criminals, location can be everywhere. The best getaway vehicle scenario is the one where the police car is in the exact opposite direction, making it easier to find a new car for catching the thief (Grekousis 2020, Franch-Pardo et al. 2020).

Thus, the integration of crime mapping and spatial analysis could be used by police officers to guide them more effectively toward which parts of the city to patrol. Simultaneously, criminals can use the same data for decision-making and planning. Crime mapping, alongside risk terrain modeling, could be the source of valuable information for resource allocation. It makes these two techniques robust in law enforcement agencies and parts of strategic planning in reducing crime. This section also affirmed that GIS can visually show how events occur within the city and can enable areas with higher crime rates to be mapped for police officers to be better informed in developing their crime-solving strategies. Crime analysis, done with the assistance of GIS, helps decision-makers to better understand the current structure of crime in their jurisdiction and make better choices to prevent future crime. Furthermore, using GIS technology would assist police departments in functioning and informing crime in three dimensions and would also link with open data and technology. In addition, police officers or analysts are also equipped with a statistical module that can receive crime data from various sources and compile it into a map using GIS (Curtis-Ham et al. 2020). Indeed, crime data continues to grow from year to year; using GIS technology will help police in managing and studying such data, including publishing data as an online map. In conclusion, the method of crime analysis (spatial and GIS) gives the required insight and tactical intelligence to manage situations and all resources during times of crisis. The hurricane or disaster response team must make a quick decision on whether to need any extra resources; all law enforcement agencies can see the unified picture of crime happening in other districts, and small descriptions and

analytics in the form of the map were immediately made available to all public safety members (Jiang et al. 2022).

6. Challenges and Ethical Considerations in Crime Geography and Policing

Ethical considerations are central to the work of police officers and researchers studying crime geography. Policing priorities and strategies develop within the framework of serving and protecting the public, reducing legal violations, and apprehending people who are believed to be involved in criminal activities. However, these practices can have a big impact on people, many of whom are not guilty of any crimes, and they can become the targets of large-scale data collection, investigations, and surveillance in the name of maintaining order and public safety. This challenge in policing has sparked an ethical dilemma and academic inquiry that directly fits the theme of the symposium: how can equitable policing services be provided to the public while not invading personal privacy rights and securing the integrity of personal data? (Souhami, 2023)

Crime geography scholars have long recognized that spatial data collected from various sources have the potential to reveal personal data details of individuals not involved in illegal behavior, ignore privacy rights, and erode public trust in police. Questions of what is right and what is fair inevitably become critical as society navigates to exploit data benefits (Vilasaj et al. 2022). What follows is a three-part essay that identifies and supplements the integration of ethics and challenges from earlier scholars while presenting strategies to: protect community members and balance public safety, balance community privacy and data collection, and implement agency-wide accountability for continuous and transparent exploration of data (Ahmad et al. 2022). Researchers further examine the role of technology in creating a vehicle for deliberate and unconscious prejudice and make recommendations for police leadership to adopt ethical approaches.

6.1. Data Privacy and Civil Liberties

Information in the text was previously sourced from the wiki titled: Crime and Violence – Causes, Types and Methods, Trade-offs in Crime Reduction Programs, and the Role of Businesses. Over time, advances in technology and policing, technology advancements, geospatial research, academic insight, and publications have led to more surveillance and detection capabilities of law enforcement. Law enforcement uses both reactive and proactive approaches to protecting and serving the public. They have data systems that can track where each officer is, and if that area falls within a smaller area for increased density, that signifies

officers may be congregating or there may be a problem, which is all documented (Llinares 2020). The centralization of crime data helps to protect the records from tampering and loss. Opinions have diffused between the technical and public sides of the development of technology and how usage deteriorates privacy and threatens civil liberties. However, even though policing methods must evolve with society and its transforming environment, the previous applications of closed-circuit television cameras produced unintended consequences and controversial attention (Choi 2021). The history of the formation of law enforcement departments is based upon protecting the freedoms and equality of all citizens from internal or external threats to peace and security. Discrimination based on class or race can arise when police use crime data for their work; however, geographic crime is based on the occurrence of the event, treating each crime equally. Police departments have guidelines and policies established for how data is collected, used, and stored. The public is now examining the misuse of their data to conduct surveillance on people through their surveillance program. Others argue that an increase in resources aimed at investigating, processing, or storing large volumes of data provides an equal amount of backlash from the public, claiming it is too intrusive or an invasion of their privacy. In conclusion, regardless of the resources applied in the policing efforts from this data, where do we find the balance between citizens' security and the violations of their privacy? (Siegler & Admussen 2020)

6.2. Bias and Discrimination

Issues of bias and discrimination are front and center within the areas of crime geography and policing. Racial disparities are a concern of the panel and often come up for questioning in offices regarding data. Briefly, here we are going to consider the ways demographic disparities and sociodemographic biases can impact either crime geography or police work, the coterminous issue here (Pierson et al. 2020). For crime geography, at issue is the potential non-representativity of data, which could be labeled as bias or error. For police work, it's a reflection of the systemic issues in police practices and the possible fallout with communities that have been overlooked or marginalized. It is important to create representations and understanding that are free from numerous forms of demographic biases. Central to our work is understanding the systemic biases (Lenau, 2023).

Disparities in crime, arrest patterns, and people in jail either in a city, neighborhood, or nationally, will all too often line right up along racial lines. This could be the result of poor crime data and presentations. Geographers and cartographers are also studying ways to account for this when working in the field, but the panel urges information officers in law enforcement

to get in front of the issues (Dass et al., 2023). When we view data, we would like to know that you have mentors who are training you to look at data as a social indicator tied to geography. The central idea here is that educational services material will be presented to those who teach at the basic levels inside the schools of criminal justice to begin reinforcing this idea. When one must teach about “crime statistics,” it should be presented as a respected job that is of critical importance to the community and other stakeholders; otherwise, we cannot attain the goals of homeland security (Kaplan et al., 2021).

Strategies to mitigate bias in law enforcement include measuring and tracking disparities, ensuring that police and court officials are aware of the extent and nature of the problem, and increased training and education in acculturating police officers. Moreover, the process of encouraging “guardian officers” and protecting against “soldier officers” can be accomplished through changed educational and training processes that emphasize community engagement and input, so that officers appreciate and become involved with the differences in each community. It is estimated that about 75% of police officers questioned about race and crime can be resolved through listening and dialoguing with, and engaging the specific community members, rather than relying on what we know is drastically incorrect, that is, rumors and misinformation that one police area of law enforcement may have of another (Fagan & Campbell, 2020). Voice democratization fosters awareness of the events and, hence, holds them accountable for answering and responding to messages. Agencies should also effectively and impartially deal with individuals’ topical complaints about disrespectful treatment they have received from police officers. It is okay to say, “Yes, we are flawed, and we can do better” in the judicial court. However, if police treat people unfairly, and then show that treatment that is unfair through their defense, then there might be an issue that needs to be diversified by the open standard (Mont’Alverne et al. 2023).

7. Future Directions in Crime Geography and Police Work

Emerging trends and future directions The crime geography papers in this volume showcase new data, new methods, innovative practices, and collaborative systems that could revolutionize the way we approach crime analysis, prevention, and response on a very practical level. Crime geographers' research is also moving towards integrating evidence about space and place at the street level to reorient investigations towards the environments where crime occurs (Tillyer et al., 2021). However, crime prevention and control that involve policing are unlikely to be effective if police departments change their responses to the crime landscape without adapting more fundamentally as well. The possibility of predicting crime in these papers is

intriguing. However, the discourse also shows that there is a new conversation and culture around data among different industries and between industry and government, as well as different arms of government, that can respond and help to prevent crime. This multi-disciplinary practice does not need to be 'sold' for police to engage with it, but it needs to be developed (Cheng & Chen, 2021).

Future Directions in Crime Geography and Police Work Policy Future Directions Strategic Responses 1) The strategic direction of police agencies will, in the future, need to be owned by the community—the community will set the parameters in which policing endeavors to help them protect their interests as residents. Collaborative decision-making and shared value on processes and outputs will enable data to be freely exchanged and shared. 2) Large-volume data streams should be an area of investment in the future to predict future criminal behavior and identify potential areas of criminal activity and hotspots for targeted preventative policing methods. In the future, other sources of data such as banking, customs, and school attendance will be instructed on sharing information in the preventative approach (Rahman & Simonson, 2020).

7.1. Emerging Technologies

Emerging technologies are on a trajectory to profoundly affect the way we perform crime geography and policing in the future. Advanced data analytics, machine learning, and artificial intelligence have already started to transform policing. These technologies use large datasets to identify trends and patterns over time. Machine learning, specifically, can use algorithms that iteratively learn from data to discover hidden insights, make predictions, and, in the case of criminal justice, support crime predictions and early warnings for officer safety (Montasari 2023). Policing is beginning to use existing data and technology in innovative ways to identify better patterns of resource allocation through crime prediction and new patterns of engagement to help create safe and secure communities. Machine learning can provide new ways to effectively identify crime that can increase police effectiveness and efficiency by saving resources that can be refocused to activities that increase community safety (Brayne, 2020).

The use of new technology in predictive, intelligence-led policing is growing at a rapid pace. Indeed, at least 40 police departments in the United States have been equipped with some capacity in predictive crime analytics. Other departments have piloted the technology. Researchers have suggested that predictive crime analytics can provide police agencies nationwide with a tool that allows them to make intelligent decisions about where to allocate their resources. There are both challenges and opportunities associated with advanced

technologies that emphasize the need for ongoing training for police officers in their trained use and sometimes precaution to ensure the technology doesn't infringe on citizen rights and police officers' perceptions of personal privacy. Yet, any concerns should not come at the expense of the public. Emphasizing the opportunities, decision-makers must work to make police data collected in the public's name work for the community's benefit. In sum, there exist critical issues related to the use of new technology in law enforcement, but those issues do not undermine the fundamental message that state-of-the-art technology can help law enforcement do its job and aid in reducing crime and disorder (Egbert & Leese, 2021).

7.2. Cross-Sector Collaboration

Perhaps the greatest shift in policing for the 21st century is the conversion of the field agency model from crackdown and crime response alone to an emphasis on problem identification, problem solving, and service delivery. The recommended approach to police and problem-solving is one that integrates the whole of policing, includes the unswerving focus of governmental agencies, and draws in a variety of private and public agencies, community resources, and leaders. Fundamental to the problem orientation is getting at the causes of crime, as moving up the crime reduction ladder requires more assertive strategies (Kovács 2014).

Today, agencies from all levels of government, as well as private groups concerned with economic and social development and community wellness, are being encouraged to collaborate and develop problem-oriented solutions. The key is to share information and resources (Servant-Miklos 2020). When the resources and expertise of governmental agencies and judicial systems are combined with community organizations and affected citizens, crime can be attacked with a broad and multi-faceted variety of services. Progress is being made when police reach into the community targeting problem places and issues. Currently, private as well as governmental resources are being used, and the private sector is helping to arrange funding. Prosecutor's offices, police, and probation and parole departments are sharing information. Increased external communications are developed with police in surrounding agencies. Some target places or "hot spots" are being coordinated with local community policing as well. Tensions may arise, but the larger vision and problem orientation appears to ultimately improve neighborhood cohesion (Belcher & Hughes, 2021).

A newly researched but particularly relevant area of cooperation is the relationship between tourism and security. Keller and Kaszás (2021) examined the appearance of tourism security in the tourism strategies of EU member states, within the policy area, and found that expressions related to safety and security (safety, security, safe) occurred most frequently in the documents,

and that EU countries primarily understand public security as tourism security, mainly crime and terrorism.

8. Conclusion

The relationship between crime geography and police work has become a cornerstone of modern law enforcement, enabling more targeted and effective crime prevention strategies. Crime geography focuses on the spatial distribution of criminal activity, helping to identify "hot spots," or areas where crime is concentrated. Understanding these spatial patterns is essential for optimizing the deployment of police resources and developing interventions that address specific local crime dynamics. By studying where and why crimes occur, law enforcement can respond more effectively to criminal behavior and anticipate future trends.

A major element in this approach is the adaptation of police strategies based on local crime patterns. Traditional reactive policing, which responds to incidents after they occur, is giving way to more proactive methods, such as community policing and problem-oriented policing. These approaches aim to build strong partnerships between the police and local communities, focusing on crime prevention rather than merely reacting to crimes. Community policing, in particular, involves collaboration with residents to identify local concerns and implement long-term strategies to address the root causes of criminal activity. This fosters not only a reduction in crime but also increased trust and cooperation between law enforcement and the public.

Technological advancements have further enhanced the capabilities of law enforcement in addressing crime through spatial analysis. Tools like Geographic Information Systems (GIS) and predictive policing software allow police to analyze crime data in real-time, mapping crime patterns and identifying emerging trends. Predictive policing uses algorithms and data analysis to forecast where crimes are most likely to occur, enabling law enforcement to intervene before incidents happen. This data-driven approach has proven valuable in improving police efficiency, as resources can be allocated to high-risk areas with precision.

In addition to the practical benefits, these technologies also bring ethical considerations. As law enforcement increasingly relies on data collection and surveillance technologies, questions about privacy and civil liberties arise. Ensuring that these tools are used responsibly and transparently is crucial to maintaining public trust and avoiding discrimination or misuse of data.

In conclusion, crime geography plays a vital role in shaping modern policing strategies. By analyzing spatial patterns of crime and integrating advanced technologies, police can improve resource allocation, prevent criminal activity, and foster stronger relationships with the

communities they serve. As the field continues to evolve, it is clear that the collaboration between geographic analysis and law enforcement will remain central to effective crime prevention and public safety efforts in the future.

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Dear Colleagues!

The International Criminal Geographical Association is organizing an online international criminal geographical competition for the second time. We welcome applications from the university students who would like to compare their knowledge of criminal geography with other students.

The purpose of the competition is to popularize criminal geography and give all students, who wish to compete, an opportunity to give an account of their current level of knowledge.

Deadlines:

Competition registration deadline: 15th April 2024

Date of the competition: 25th April 2024, 14.00-15.00 pm

Venue: online (via Microsoft Teams)

Participation is free!

Recommended literature:

Mátyás, Szabolcs (2024): Crime Geography

https://real.mtak.hu/204407/1/Crime_Geography_MatyasSzabolcs.pdf

The first three winners of the competition will receive a certificate.

If you would like to participate in the competition, please send us an e-mail to the following e-mail address till 15th April 2024 (mszabolcs1975@gmail.com).

Organising committee:

Dragana Čvorović Ph.D. associate professor (University of Criminal Investigation and Police Studies)

Szabolcs Mátyás Ph.D. (head of the organising committee), associate professor (Ludovika University of Public Service) (head of the organising committee)

Máté Sivadó Ph.D., associate professor (Ludovika University of Public Service)

Miklós Tihanyi Ph.D., associate professor (Ludovika University of Public Service)

Gabriella Ürmösné Simon Ph.D. associate professor (Ludovika University of Public Service)

Vince Vári Ph.D., associate professor (Ludovika University of Public Service)

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CGR is an English-language journal. Either US or British/Commonwealth English usage is appropriate for manuscripts, but not a mixture of these.

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Abstract: 200-300 words

Keywords: 4-6 maximum

References style in text: 10 pt, footnotes

References: at the end of the paper in alphabetical order (TAYLOR, Tom (2018))

Picture format: JPG

Authors' name: main author must be underlined

Citation: APA format

Potential topics might include:

- Crime and GIS
- Crime and analytical work
- Predictive policing
- Geographical features and crime
- Spatial criminalistic methods
- Criminology in spatial aspect

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