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THE RULES OF SPATIAL ILLUSTRATION OF CRIME IN INTERNAL POLICE REGULATIONS[1]

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The current study plans to examine the presence and regulation of spatial illustration of crime within the internal standards of the police. It examines item by item all the standards, even those which marginally deal with the spatial illustration of crime. After examining the internal standards of the police, the author drafts specific recommendations regarding the way of the best regulation of these questions. It also introduces the practice of crime mapping of several European countries by which we can compare the national and foreign systems from several aspects.

Keywords:
cartography, crime mapping, criminal geography, law, law enforcement

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1. INTRODUCTION

Probably a lot of people would pose the question while reading this study why we have to deal with the legal regulation of an almost unknown area (crime mapping). The answer is very simple. The spatial illustration of crime has received a bigger role but the national regulation has not been made and it has not followed the international trends present in the field of police science at the same pace.[2] There is no comprehensive legal standard which would regulate the mapping work of home affairs organisations. Beyond that we must note that the national legal regulation is not only insufficient and diffuse but the spatial illustration of crime and its application in practice, with the exception of a few areas, practically do not exist. It does not operate despite the fact that the Robotzsaru NEO mapping sub-system would provide a unique possibility for that. The primary target of the present study is to summarize and introduce the current standards, highlighting the strengths and weaknesses of the current regulation. Following that, it would come up with proposals for the national system, which would modify the current legal regulations.

2. THE RULES OF SPATIAL ILLUSTRATION OF CRIME IN INTERNAL POLICE REGULATIONS

In the chapter below, I would like to introduce in chronological order those most significant current internal police regulations which regulate the cartographic display and, even if only superficially, mention the necessity of the spatial illustration of crime.

2.1. The 11/1998 (IV. 23.) National Police Headquarters (hereinafter NPHQ) instruction on the publishing of the Troop Service Regulation of the Police of Hungary

The year of the publication of NPHQ instruction is 1998, thus the notion of digital map does not appear here. The instruction uses the notion of "map" in a general sense or mostly optionally (e.g. on the "map" or "sketch", on the "Sketch", "work map", "map or observation sketch", "event diary and registry map"). The map is meant mainly as a traditional printed map or sometimes a map which is drawn by hand. In our case neither point of the instruction bears any relevance. In case of the instruction, I feel that it is a defect that it does not explain the above notions. These expressions are not known in cartography and in my opinion it would be important to describe the definitions precisely.

[2] Erdősi Sándor (2002a): Feljegyzés a bűnözési térképről. *Kriminálstatisztikai Értesítő,* No. 36; Erdősi Sándor (2002b): Régi-új javaslatok a bűnözés méréséhez. *Belügyi Szemle,* Vol. 50, No. 4.

2.2. The 4/2005 (II. 4.) NPHQ Public Security Main Directorate measure on the regulation of the defensive map supply of the police

The standard was published more than a decade ago though it can be considered modern since it mentions the digital maps in addition to the analogue ones. The standard cannot really be connected to everyday police work since it primarily deals with the defensive cartographic material supply of the police, as well as the map procurement of the given period.

2.3. The 31/2010 (OT 17.) NPHQ instruction on the maps to be applied during tasks to be solved by police troop force

This NPHQ instruction primarily regulates the integrated map usage of the police force, the evolvement of the integrated map usage of the police force, the formation of map supplies and the rule of application. This instruction is only a couple of years old, still it only mentions the paper-based maps. It regulates several questions which would not emerge in case of digital maps. (E.g. How many maps are needed for a given police unit? How to store the maps so that they would not get damaged? Where to acquire the new maps from when they run out? etc.) In connection to the instruction, I would point out a suggestion that the possibility of using a digital map should be put in the text of the standard. Of course digital maps could not push out the "analogue" maps, though it is important to establish the possibility to use digital maps by all means, even on the level of internal standards. Based on the above, I feel it necessary to stress that in addition to storing the paper-based maps, the storage of digital maps should be introduced, as well; this way we can reduce the number of paper-based maps and the above mentioned problems could be practically sorted out totally.

2.4. The 18/2011 (IX. 23.) NPHQ instruction on the unified and obligatory use, legitimacy order, data protection, as well as the system development regulations of the Robotzsaru integrated management and case processing electronic file-handling system

We could safely assume that the 18/2011 NPHQ instruction on the Robotzsaru program contains several significant information concerning the legal regulation of the electronic cartography of the police. Our assumption would not be unfounded since the Robotzsaru NEO system contains among others the cartographic sub-system which shows the places where the geocoded crimes are committed on a map.[3] Unfortunately we experienced that

[3] Mátyás Szabolcs (2017a): A térinformatika a hazai rendvédelmi szervek gyakorlatában. In Balázs Boglárka ed.: *Az elmélet és a gyakorlat találkozása a térinformatikában VIII.* Debreceni Egyetemi Kiadó.; Mátyás Szabolcs (2017b): A térinformatika rendészettudományi alkalmazásának lehetőségei.

the above mentioned instruction practically does not involve any relevant information that would be connected to cartography or GIS.[4] The instruction uses the term "work map", already known from other internal standards, in several places. It defines that in the Robotzsaru system a "work map" must be kept, though we did not find a definition or instruction for the term of work map and for the method of how to keep it. Article 21 mentions that under the "Search" menu entry it is possible to run further searches, lists and statistics, among others, a "cartographic sub-system". Article 31 of the order lists which of the criminal data is considered relevant during the criminal application of the Robotzsaru system. During which, in Article "k" it mentions that "the GEO code of crimes committed in Hungary which can be connected to a place" are considered relevant data. In a few articles below (Article 42), in connection with the criminal application of the Robotzsaru system, the GEO codes of Hungarian sites are also mentioned among the relevant data. We can sum up by saying that from a cartographic point of view, the internal standard cannot be considered informative at all because the person who created the standard has forgotten about several important things.[5]

Naturally, we cannot expect from an internal standard which regulates a computer work program to give attention to all the details. The detailed description and the practical guide in case of most programs is the user manual. In case of the Robotzsaru program, it is the Robotzsaru – NEO Electronic File-handling System, the File-handling System User Manual of the Hungarian Police. I have had great expectations about the user manual of the system. My great expectation was followed by a huge disappointment because the cartographic sub-system is not mentioned in it at all. The question can arise if neither the standard regulating the application of the program, nor the manual introducing its operation deal with the area, then how the workers of the police force can learn the use of the sub-system and how they can get information about its existence.

2.5. The 57/2013 (XII. 21.) NPHQ instruction on the unified operation of the activity-control centres established for the undertaking of general police work, duty centres of certain police organisations, as well as the centres receiving emergency calls

One of the latest NPHQ instructions, which even if indirectly, but they are connected to the spatiality of crime. In connection with that, we can safely say that we do not lag behind the police practice of developed countries. The instruction regulates among others the services of those service vehicles which are equipped with a GPS and are monitored by

In Boda József – Felkai László – Patyi András eds.: *Ünnepi kötet a 70 éves Janza Frigyes tiszteletére.* Budapest, Dialóg Campus.

4 Bihonné Király Edit (2014): *Robotzsaru – NEO Elektronikus Iratkezelő Rendszer. A Magyar Rendőrség iratkezelő rendszerének felhasználói kézikönyve.* Nyíregyháza.

5 More detailes in Sütő Ákos (2016): Robotzsaru (NEO) Integrált ügyviteli és ügyfeldolgozó rendszer információvédelmi lehetőségei. *Hadtudományi Szemle,* Vol. 9, No. 2.

the duty leaders (main person on duty, duty officer) of the activity-control centres, the execution of the instruction and the operation of the tools and systems. In the activity-control centres (from now on ACC) people can follow on the monitor and digital map the actual state (NOVA-TIR map). They can see which vehicle can be called, as well as they can trace on a daily basis the status of those in service. The creator of the standard, for example, names geocoding which is a key notion in case of digital maps. The geographical location with coordinates is the basis on which later digital maps can be created. Despite the several virtues of the system and the instruction, we can state a defect which is the fact that it only composes instructions related to the current state, although knowing the past state would greatly help the current public order and criminal situation mapping or prediction (see predictive policing).

The 57/2013 NPHQ instruction was modified with the 5/2015 (IV.16.) NPHQ instruction. The modification was for the better of the instruction since a lot of new concepts and work processes appeared in it. The renewed 57/2013 NPHQ instruction in my opinion meets the highest expectations and by applying the system, the technical facilities of the Hungarian Police matches the most developed police forces of the world. There is one deficiency though which has been mentioned above that even the modified instruction deals exclusively with the real time activities which shows the momentary situation but does not show the analysis of past infringements and the future-related predictions connected to them. This is definitely a deficiency because it would serve with relevant information for the ACC, e.g. knowing the places of the infringements which happened during the previous few duties. If geocoding of the infringements happened, it would be a big step forward to use a predictive software in terms of the data of the previous few weeks and thus we could render it probable the places of the crimes to be committed in the future. The technical conditions are given – the places of infringements are geocoded – so with relatively little time spent, we could provide significantly more information for the public order and criminal force.

2.6. The 13/2014 (V. 16.) NPHQ instruction on the execution of police work connected to infringements related to prostitution, as well as the handling of trafficking

The NPHQ instruction above connected to the up-to-date register of the protected areas designated for prostitutes also uses the expression "work map". We are facing a fresh standard though the standard creator did not mention the digital representation/map. As I see it, the use of a digital map would be extremely useful in this case since the cartographic display of actual infringements connected to prostitution could help localize the problem and the successful operation (e.g. hot spot analysis). In our case the NPHQ instruction does not provide any worthy information.

2.7. The 26/2015 (XII. 9.) NPHQ instruction on the district commissioner regulation

The instruction deals with the question of maps at two places. In Article 74 and 75 of Chapter VI the creator of the standard mentions the operational district map necessary to undertake the district commissioner service in Article 74 while in Article 75 it mentions what the district commissioner operation map needs to contain. In our case Article 75 a. can be considered relevant based on which *"The district commissioner operation map contains a) the headquarters of the district commissioner, the borders of the operation area of the district commissioner and the map draft of the settlement belongs to that as well as the map of those settlements which have touristic importance or of other importance done in the Robotzsaru NEO system."* So it means that the GIS application offered by Robotzsaru NEO appears here.

The creator of the standard is taciturn because we do not know what kind of map exactly it is, neither what kind of obligatory elements are needed to be included in the map.

2.8. The 13/2017 (III. 24.) NPHQ instruction on the patrol and guard service regulation

The text of the standard has gone through significant modification compared to the earlier 22/1997 NPHQ instruction, thus it fully meets today's expectations. In terms of the maps necessary to complete duty tasks, it appears all the time that the necessary maps should be available via computer system, as well.

On the basis of the internal police regulations reviewed above, we can state that certain standards need to be actualized since they do not meet today's expectations in every aspect. But we happily acknowledge that in terms of the newer standards, it is clear that the Hungarian police keep up with the technical development and we can state without exaggeration that certain areas would stand their grounds at even the most developed police forces of the world.

3. PRACTICAL QUESTIONS OF THE REGULATION OF THE AREA

Among the recommendations for the practical aspect, we should begin with defining precisely what we mean by crime map.[6] Unfortunately, in the last few decades no such definition has been created. It is a sad thing to acknowledge that the definition existed even in the service regulation issued for the police force in 1948. It does not only include a definition but also gives directions connected to the content elements to be displayed on the maps (Article c. of 1032). We can state that the regulation was quite ahead of its time

[6] Pődör Andrea (2015): Usability Study on Different Visualisation Methods of Crime Maps. *International Journal of Geoinformatics,* Vol. 11, No. 4. 15–22.

and the internal standards which were created since then are lagging behind in several cases even compared to the service regulations of 1948.

The primary target of my study is to reveal the deficiencies of the internal standards and if I find one, then draw up genuine proposals in connection with the digital map application of law enforcement organisations. As I have mentioned before I have discovered several deficiencies and thus I would like to draw up the following recommendations:

1. An NPHQ instruction is needed to regulate in details the conditions of the application of digital maps and the level of their applications etc.
2. In the instruction I suggest defining the following concepts connected to cartography and digital mapping such as accident point map, crime mapping, digital map, surveillance sketch, hot spot, cold spot, geographical coordinate, geocoding, work map, registry map, cartographic sub-system.
3. I suggest supplementing the user manual of Robotzsaru NEO with information on the cartographic sub-system.
4. I suggest organising a training for the police staff where they get to know the criminalistic possibilities of crime mapping.
5. I deem it necessary to familiarize the Robotzsaru NEO cartographic sub-system with the police staff through distant learning (e.g. by sending a few pages of electronic education material).
6. By involving IT specialists, it is recommended for heads of department and staff of higher ranks and for police leaders involved in criminal work to get to know crime analysis possibilities offered by GIS.
7. A constant monitoring of the newly introduced cartographic applications of the law enforcement agencies of developed countries.
8. In order to get to learn the law enforcement GIS necessary for practical work, it is recommended to have these kinds of skills written down in the job description.
9. As a technical recommendation and not as a legal one, I suggest the continuous development of NOVA-TIR map and Robotzsaru NEO map by supplementing them with the above mentioned efficiencies.

4. THE EU PRACTICE OF CRIME MAPPING

In order to learn more about the EU police practice of crime mapping I gathered data and information from four sources (CEPOL, embassies, police diplomats from Brussels, IPA). Useful replies were received from only ten countries (Greece, Sweden, Poland, France, Germany, the Czech Republic, Italy, Switzerland, Austria, Latvia). I would like to mention just for curiosity that there were several countries from where I received three replies while from others I did not receive any. The English-written questionnaire was made up of eight questions. While drafting the questions, I tried to make them as short and compact as possible, so that the chance would be little for a non-native English speaker to

misunderstand the question. I also considered it important that the answers could be given in a simple way, so that people would not turn down the answers because of their lengths.

After evaluating the answers, we can make the following conclusions:

In Question 1 (Do you have in your country a standard computer system everyone working in the law enforcement sector can use in their daily work?) I wanted to find out whether police forces of other countries have a similar, nationally accessible computer system to the Hungarian Robotzsaru NEO system. From the answers received we can learn that all countries – except Switzerland – have a nationwide police computer system. Due to its federal system, this does not exist in Switzerland but the exchange of criminal data is constant between the different police forces.

In Question 2 (If you have such a computer system, can you, please, confirm whether crime maps can be prepared by means of it?) I was looking for answers whether it is possible to generate GIS based maps by the police computer system. The answer was uniform; the computer system of all ten countries are suitable to make crime maps.

With Question 3 (If your computer system is suitable for making crime maps, can you, please, confirm if these crime maps are available for every policeman?) I was interested whether these maps were accessible for every police officer. The representatives of three countries (Italy, Switzerland and Greece respectively) answered that the map generating/creating function was not available for everyone. This is similar to the Hungarian system where the cartographic sub-system is not accessible for every organisational unit.

Question 4 (If your computer system has crime maps, can you, please, tell what kinds of crime these maps indicate?) was related to the types of crimes that can be displayed on the map. The representatives of France and Austria answered that all kinds of delicts could be displayed with the help of police computer system. The Czech and Polish answers contained specific figures. On the Czech police map 18, while on the Polish police map 13 types of crimes can be displayed. (The systems of these two countries are similar to the Hungarian one). From the German answer we can learn that "street crimes" can be indicated on the map.

In Question 5 (If your computer system can prepare crime maps, can you, please, send pictures of them – for example: print screen – so that I can compare the graphical visualization, quality etc. of the crime maps of different countries? The pictures of the crime maps do not need to contain up-to-date information.) I considered it important so that I can compare the characteristics, available functions, graphic designs etc. of the maps of all countries. Five out of the ten replies contained maps, too. I had to realize though that the few print screen photos sent to me were not enough to make a precise comparison in connection with the specific maps, it was enough only to compare the main characteristics of the maps.

We can state that the French system named IDIC SI-V2 can be considered the most developed one. Moreover, the French colleagues enclosed a separate description and information sheet. You can make measures on the map and can put pictograms on it etc. Its graphic design is the best; though, of course, it is subjective.

If we only consider a few pictures of the Polish, Czech, Latvian and Greek maps, we can state that they are graphically more detailed and more pleasing in a cartographic sense, and there is a bigger number of cartographic "accessories" than the Hungarian Robotzsaru map.

Based on Question 6 (Are crime maps used in the daily police work in your country?) we can state that crime map has a growing role in everyday police work in every country. They did not send me a specific percentage showing how many percentage of the police officers use it in everyday practice but all answers received contained that everyone who needs it for the scope of work already uses the geocoded GIS based maps.

In Question 7 (If yes, in what areas are they used?) I wanted to know if crime maps are used in the given country during police work and also what is the primary area they use them in. Most answers contained the criminal and public security areas but in Sweden crime maps are used even by courts to show and explain certain processes. In Austria they use it for hot spot examinations and crime analysis while in the Czech Republic for the optimization of police force and to improve the cooperation of the patrols, as well.

Question 8 (Is there any police webpage with public crime maps available for citizens in your country? There is an example for publicly available crime maps provided by police.) was related to whether there was a public police website where the crime map is available for the public. Despite my presumptions there is no such website in most countries where citizens can look at the criminal situation of their neighbourhoods. Currently there is no such website in Austria, the Czech Republic, Switzerland, France, Germany (they used to have), Sweden and Greece. This clearly shows the difference in perception between Europe and America when it comes to crime maps.[7]

5. SUMMARY

It was laid out in the study that the examined internal police regulations practically did not contain any worthwhile information in connection with digital mapping and police GIS. The study revealed the deficiencies of internal standards and drafted recommendations

[7] For more detailes see Mátyás Szabolcs – Sallai János (2014): Kriminálgeográfia. In Ruzsonyi Péter ed.: *Tendenciák és alapvetések a bűnügyi tudományok köréből.* Budapest, Nemzeti Közszolgálati és Tankönyv Kiadó. 335–353.

in all cases on how to amend them. Consequently, the author suggested the creation of an internal standard in connection with the cartographic and GIS regulations of law enforcement organisations. In the author's opinion, the internal police regulations have to define the most important and common concepts, determine the fields, where law enforcement GIS has to be applied, and police has to develop a GIS training plan.

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