One Step Further in the 'Surveillance Society': The Case of Predictive Policing

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EXECUTIVE SUMMARY

This paper is concerned with the study of predictive policing as a tool for surveillance. With regard to the European legal framework, this research studies the influence of the predictive policing model primarily on the principle of presumption of innocence (Article 6.2 ECHR) and on reasonable suspicion.

The goal is to identify if predictive policing might be used 'preventively' against potential perpetrators of a criminal offence, or more precisely, whether it represents an allowed policing practice given the presumption of innocence as enshrined in Article 6.2 ECHR (European Convention on Human Rights).

From a citizen's perspective, surveillance is a part of everyday life. Especially with digital surveillance, the need has emerged for a constant identification of individuals, in which tracking and location technologies are used by public authorities to command and control a large population in public contexts (Wright - Kreissl, 2015, 1). To understand how surveillance works, we can recognize metaphors within literature as a substratum for this analysis, such as the Orwellian idea of a totalitarian state in the novel 'Nineteen Eighty-Four' (1984) as well as the Bentham's 'Panopticon' (Lyon, 2001, 7).

A short introduction to predictive policing, followed by a brief mention of Article 6 ECHR bring us to the problem definition of this paper: *Is predictive policing allowed given the presumption of innocence as enshrined in Article 6.2 ECHR?*

First and foremost, there is provided a clear and detailed definition of predictive policing starting from the intelligence-led policing rationale, moving further to the predictive policing and then to the so called prediction-led policing (business) process. Finally, a brief specification of the pre-emptive profiling on individuals is provided. In focusing on predictive policing, both positive and negative general effects are presented in relation to the principle of presumption of innocence. For the positives: better accuracy, a 'reverse approach' in investigation, the reduction of costs for policing and crime reduction. For the negatives: false positives, the 'bad data'/lack of transparency, reciprocal lack of trust, discriminatory use and effect and shift in power toward the government (Part 2).

Given the above, it is essential to present the current legal framework concerning the presumption of innocence at Article 6.2 ECHR, followed by relevant ECtHR (European Court of Human Rights) case law on the subject. Due to a current lack of reference to predictive policing in the ECtHR jurisprudence, some case law on presumption of innocence is suitable for one analog interesting interpretation. More precisely, the following cases are considered relevant for this research: *Ilgar Mammadov v. Azerbaijan*; *Fox, Campbell and Hartley v. The UK*; *Guzzardi v. Italy*; *S. and Marper v. United Kingdom* (Part 3).

Moving to the next part, taking into account the potential impact of predictive policing on the presumption of innocence and reasonable suspicion, there are two main research questions: 1) What is the impact of the predictive policing model on individuals, in particular regarding the principle of presumption of innocence (Article 6.2 ECHR)?; 2) Is predictive policing compatible with the current interpretation of Article 6.2 ECHR? Starting with the former question, both positives and negative effects are recalled within the predictive policing impact on the presumption of innocence. (4.1.1 and in general Ferguson, A, G, 2012-2015). According with the second question, in respect of the ECtHR jurisprudence, some key concepts are illustrated: the meaning of reasonable suspicion, a definition for offence and the relation between presumption of innocence and the risk of stigmatization for individuals (see 4.1.2).

Overall, I recognized three main answers to the problem definition of this research: a) there are both positive and negative effects between predictive policing and the European legal framework. On one side, they provide valuable support for police investigations. On the other side, its drawbacks highlight discrimination towards particular individuals or groups of people; b) there is an evident contrast or lack of coherence between the ECtHR orientation on presumption of innocence and reasonable suspicion in comparison with predictive policing. However, as fundamental presumption, the framework of Article 6 ECHR is based on a reactive framework and not on pre-crime models, so this new surveillance paradigm is not included in the structure of Article 6 ECHR (Galetta & De Hert, 2014, 291 – more details at 4.1.2). More importantly, due to the fact that predictive policing alone cannot alone justify reasonable suspicion or probable cause for a modification of its interpretation, we should remember that its resulting data is

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producing mere estimates with high probability, but they are never certain (Perry et al. 2013, 8 – details at Part 4).

In the end, looking at predictive policing and legal framework from a future perspective, this article presents a projection starting from two pillars: the role of law and the role of technology. With the former there are two options: to pay more attention to the applicability of the presumption of innocence, or supporting new regulations concerning the use of surveillance technologies in criminal proceedings. With the latter, three interpretations and the importance of software agents (see 5.1). In conclusion, a specific future projection on predictive policing and criminal law. Within the transition from information society to data-driven society, I mentioned the 'presumption of innocence by design' suggested by Hildebrandt as example of solution to the problem (Hildebrandt, 2015, 195).

OVERVIEW OF THE MAIN FINDINGS

This paper puts forward the following problem definition:
Is predictive policing allowed given the presumption of innocence as enshrined in Article 6.2 ECHR?

Given the problem definition, this research sets out to answer the following research questions:
1) What is predictive policing?
2) How is the presumption of innocence protected by Article 6.2 ECHR?
3) What is the impact of the predictive policing model on individuals, in particular regarding the principle of presumption of innocence (Article 6.2 ECHR)?
4) Is predictive policing compatible with the current interpretation of Article 6.2 ECHR?
5) How should we interpret the legal framework for the future and what possible changes are necessary?

From a general point of view, this research studies the development of predictive policing as a tool for surveillance. Taking into account the European legal framework, I focused on the potential influence of such a tool on the presumption of innocence (Article 6.2 ECHR) and on the reasonable suspicion principles. The main target has been to identify whether predictive policing might be used 'preventively' against potential perpetrators of a criminal offence, or more specifically if it represents an allowed policing practice given the presumption of innocence as enshrined in Article 6.2 ECHR.

The main findings in relation to the research questions are outlined below.

1) What is predictive policing?
After a brief introduction to the 'surveillance society' concept (Lyon, 2001), in Part 2 I illustrated the predictive policing moving through its main features and developments. I have also recognized both positives and negative general effects with the principle of presumption of innocence. In the end, I provided a final definition of predictive policing (see 2.5).

2) How is the presumption of innocence protected by Article 6.2 ECHR?
I recognised the structure of the current legal framework on presumption of innocence at Article 6.2 ECHR followed by relevant ECtHR case law on the subject (see 3.2 & Conclusion).

3) What is the impact of the predictive policing model on individuals, in particular regarding the principle of presumption of innocence (Article 6.2 ECHR)?
With regard to this question I recalled some positives and negative effects of predictive policing, but even more oriented to the impact on presumption of innocence and reasonable suspicion (See 4.1.1).

4) Is predictive policing compatible with the current interpretation of Article 6.2 ECHR?
According to the ECtHR jurisprudence, I delved more on the following key concepts: the meaning of reasonable suspicion, a definition for offence and the relation between presumption of innocence and the risk of stigmatization for individuals (see 4.1.2). Overall, I identified three main answers to my problem definition (see Conclusion).

5) How should we interpret the legal framework for the future and what possible changes are necessary?

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In the end, taking predictive policing as a point of reference, I concluded my research by understanding how modern law has to deal within a variable technological perspective. I focused on two main factors: the role of law and the role of technology. Considering one specific future projection on predictive policing and criminal law, I mentioned the Hildebrandt's suggestion of 'presumption of innocence by design' as solution to the problem (Hildebrandt, 2015, 195 – see Conclusion).

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1. INTRODUCTION

This paper concerns the development of the predictive policing model as a tool for surveillance. With a focus on the European legal framework, it studies the influence of this model on the principle of presumption of innocence (Article 6.2 ECHR) and on reasonable suspicion.

This research is divided into three parts: first, a brief description about what the predictive policing model concerns; second, the impact of predictive policing on human rights, especially the presumption of innocence (Article 6.2 ECHR); and finally, how to interpret the current legal framework from a future perspective with possible necessary changes.

Section 1.1 gives some fundamental explanations about surveillance in the digital era. Section 1.2 focuses more on predictive policing with basic definitions and applications, whereas Section 1.3. posits some basic elements about the principle of presumption of innocence at the ECtHR. As a result, Section 1.4 presents the problem definition discussed in this paper. Section 1.5 follows the related research object and research questions. Lastly Section 1.6 sheds light on the research methodology and gives a general overview of the research.

1.1 Surveillance in the Digital Era: Brief Considerations

There is no doubt that surveillance is part of everyday life, especially from a citizen's perspective. The aim of surveillance has emerged through a necessity for identification, tracking and identifying individuals in different public contexts within broad and limited areas. Actually, high mobility of citizens represents a relevant aspect of modern society, and surveillance techniques became fundamental for public authorities to command and control a large population (Wright - Kreissl, 2015, 1).

Generally speaking, the scope of surveillance is twofold: take care and look after others (Lyon, 2001). Especially from the government point of view, surveillance plays a determinant role in providing security and social order. These considerations take us directly to the concept of the 'surveillance society'. Many social scientists had delved into this issue by the end of 1970, nevertheless, we can attend to a noticeable public awareness after Richard Thomas (British Information Commissioner) pointed out that, due to proposed national identification cards, the UK was in danger of "sleepwalking into a surveillance society" (See link BBC News). From this perspective, David Lyon defines surveillance as: "any collection and processing of personal data, whether identifiable or not, for the purposes of influencing or managing those whose data have been garnered" (Lyon, 2001, 2).

According to Lyon, the surveillance society concept is specifically influenced by other models of how surveillance works, recognizing the role of literary metaphors as a substratum for this analysis. Such models are the Orwellian idea of a totalitarian state as described in the novel 'Nineteen Eighty-Four' (1984) and Bentham's penitentiary project called 'Panopticon' (Lyon, 2001, 7).

The aim of 'Panopticon' was that prisoners were not aware if and when they were being watched. Its innovative design permitted the guards, shielded from the view of prisoners, to observe them constantly from a privileged position situated at the center of the structure. Because of these circumstances, doubts and uncertainty regarding being watched by guards would encourage obedience between individuals, affecting their behavior continuously. The central target of such archetype is clearly described by Bentham's words: "morals reformed - health preserved - industry invigorated instruction diffused - public burthens lightened - Economy seated, as it were, upon a rock - the gordian knot of the poor-laws are not cut, but untied - all by a simple idea in architecture?" (Bentham, 1787).

However, we have to wait until Foucault's studies to observe the shift of the 'Panopticon' logic in disciplinary control, from brutal and violent demonstrations of powers to a more calculated technology of subjection by the state. Foucault's idea of surveillance is constituted by two principal elements: the collection of information, and the direct supervision of subjected individuals. One step further about the latter element

is demonstrated by the increase of information and communication technology (ICT). Even if the French philosopher did not make this specific association, this kind of reference is often proposed in literature. Moreover, it is also evident how the 'Panopticon' model can influence our freedoms shifting the ownership of power in favor of surveillance techniques controllers (Schermer, 2007, 8).

This power shifting towards the government evokes a brief consideration to the role of society and its increasing lack of awareness in public policy. For instance, Snowden's revelations on massive digital surveillance by governments do not only represent the decline of political participation by the society within liberal democratic states, but also the breakdown of the policy in itself using Agamben's words. As we can see, temporary suspensions of civil rights, increases in police powers, and grants of unlimited executive power have shifted gradually into permanent structures of governance (Stone, 2012, 153). In the end, Agamben insists that due to fears over safety contemporary states have particularly shifted from politics to policing and from governing to managing using electronically enabled surveillance systems. In this way the real importance of politics and then social involvement in public affairs are seriously affected (Bauman, Z et. al., 2014, 141).

In practice, coming back to the 'Panopticon' concept and the increase of CCTV with computer-mediated surveillance tools, we can observe an evident switch for social risk management from ex-post remedies to pre-emptive schemes. The pre-emptive model puts surveillance practices towards actions with a particular focus on data transfer of individuals. Its applications are multiple, in fact, the control of such data can guarantee a better risk management both for those who are considered at risk and those who pose risks to others (Murakami - Ball - Lyon et al. 2006, 11).

1.2 Introduction to 'Predictive Policing'

The 'Predictive Policing' shall be considered one of the last technological applications within the context of surveillance society. Before going in depth with its features and reasons, nothing better than a real example could offer an immediate picture about what predictive policing entails.

On the 14th of March 2014 a serial robber was detected and arrested thanks to the "Key-Crime" software program, developed by the police in Milan (Italy). The software had analyzed his criminal behavior using an algorithm able to cross hypothesize about human criminal intentions and predicting he would have perpetrated that specific crime (*Corriere della Sera* online ed., 27 March 2014). According to his criminal background, the thief was responsible for eleven robberies in different pharmacies since December 2013. At the end, after one last attempted robbery in a pharmacy, he was arrested by the police in the city of Lodi. The algorithm used to catch the criminal could represent something of revolutionary, however, this is nothing new under the sky for experts in criminal risk-assessment (Mendola, M, 2014). Also research from the Memphis Department of Pre-crime shows how factors leading to crime are multiple and complex and tracking crime rates back to primary causes remains notoriously difficult (Vlahos, J. 2012). Predictive strategies such as Memphis's Blue Crush system have helped to stem crime. Since 2006, when Blue Crush was instituted, crimes against property and violence decreased significantly about 26% (See link IBM).

With a specific focus on individuals, which is also the main target of this research, Richard Berk from the University of Pennsylvania has centered his studies on the individual-related algorithm. His research is able to estimate the probability with which a person on probation could commit homicide based on a statistical review of thousands of cases and account variables such as age, sex, type of crime as well as the date of the first infraction (Berk et al. 2009).

1.3 An Introduction to Presumption of Innocence - Article 6.2 ECHR

From a strictly legal perspective, this paper will substantially focus on presumption of innocence as a point of reference for the western legal culture. The theoretical tension between fundamental rights and law

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enforcement (represented by predictive policing in this case) makes it necessary to deal with such a principle. In other words, we need to identify if predictive policing might be used 'preventively' against potential perpetrators of a criminal offence, and otherwise, if it represents an allowed policing practice given the Article 6.2. ECHR.

In the absence of specific judicial decisions amongst predictive policing and presumption of innocence, the aim of this research is to figure out whether contemporary ECtHR decisions illustrate similar scenarios in practice, and how.

Taking into account the European legal framework, the presumption of innocence is established at Art. 6 ECHR paragraph 2:

> *"1. In the determination of his civil rights and obligations or of any criminal charge against him, everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law. Judgment shall be pronounced publicly but the press and public may be excluded from all or part of the trial in the interest of morals, public order or national security in a democratic society, where the interests of juveniles or the protection of the private life of the parties so require, or the extent strictly necessary in the opinion of the court in special circumstances where publicity would prejudice the interests of justice.*
>
> ***2. Everyone charged with a criminal offence shall be presumed innocent until proved guilty according to law**.*
>
> *3. Everyone charged with a criminal offence has the following minimum rights:*
> *(a) to be informed promptly, in a language which he understands and in detail, of the nature and cause of the accusation against him;*
> *(b) to have adequate time and the facilities for the preparation of his defence;*
> *(c) to defend himself in person or through legal assistance of his own choosing or, if he has not sufficient means to pay for legal assistance, to be given it free when the interests of justice so require;*
> *(d) to examine or have examined witnesses against him and to obtain the attendance and examination of witnesses on his behalf under the same conditions as witnesses against him;*
> *(e) to have the free assistance of an interpreter if he cannot understand or speak the language used in court".*

In brief, paragraph one has the function of disallowing premature declarations of guilt by any public official expressed in different forms such as: statement to the press about pending criminal investigation, a procedural judicial decision and, particular security arrangement during the trial when the applicant is shown to the public in imprisonment state (Vitkauskas, Dikov, 2012, 78). At paragraph two we can recognise evidently the principle of presumption of innocence. In the third and last paragraph we can observe all minimum rights that should be guaranteed to someone charged with a criminal offence.

1.4 Problem Definition

Given these initial considerations on predictive policing and presumption of innocence under Article 6.2 ECHR, it is necessary to define the target research of this paper. We have the following problem definition:

Is predictive policing allowed given the presumption of innocence as enshrined in Article 6.2 ECHR?

The urgency of this debate is in understanding if, and in which terms, predictive policing applied on individuals is allowed according to the presumption of innocence at Article 6.2 ECHR, plus the reasonable suspicion reasoning. Within the current state of the art, I can foresee how predictive policing posits an infringement of the European legal framework. In other terms, the use of predictive policing applications for law enforcement may pose a risk to the presumption of innocence as actually formulated because it is more oriented towards statistical estimates, rather than on actual behavior of citizens.

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1.5 Research Objective and Research Questions

Considering the problem definition, it is important to underline the research objective linked to the following research questions presented in this research.

First of all the research objective: predictive policing represents a very recent application of surveillance which give rise to many different considerations. The question how might it be used 'preventively' against potential perpetrators of a criminal offence constitutes our primary target of research.

As jurists, we need to analyze this challenge focusing on principles of law and cases in the European legal framework. To reach this goal, we have to analyze these five questions respectively:

1) What is predictive policing?
2) How is the presumption of innocence protected by Article 6.2 ECHR?
3) What is the impact of the predictive policing model on individuals, in particular regarding the principle of presumption of innocence (Article 6.2 ECHR)?
4) Is predictive policing compatible with the current interpretation of Article 6.2 ECHR?
5) How should we interpret the legal framework for the future and what possible changes are necessary?

1.6 Research Methodology and Research Structure

This paper will be based on a *qualitative research methodology* using three main resources: desk research, literature study and case law analysis. Due to the very recent development of this topic, it is not possible to cover all applications and outcomes; on the contrary, it is necessary to evaluate some relevant case law in the context of fundamental rights and policing, with specific reference to the presumption of innocence - Article 6.2 ECHR.

The Introduction is used to provide a general explanation about the research structure and the surveillance society concept (Lyon, 2001).

The second Chapter focuses on the definition of predictive policing and its features in detail. The third Chapter analyzes the principle of presumption of innocence and reasonable suspicion corroborated by relevant case law of the ECtHR on the subject. The fourth Chapter concerns a more practical and legal reasoning, dealing with the impact of the predictive policing tool in respect of presumption of innocence and reasonable suspicion.

Finally, the fifth Chapter will interpret the current legal framework from a future perspective, looking for possible changes.

In the end, the Conclusion provides an overall picture of the entire research.

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2. WHAT IS PREDICITVE POLICING?

To reach an answer about what is predictive policing, we need to understand its scheme through its main features and developments. Overall, we can evidence three basic steps: 1) Intelligence-Led Policing; 2) From Intelligence-Led Policing (ILP) to Predictive Policing; 3) The Prediction-Led Policing (Business) Process. In the end, the meaning of pre-emptive profiling will be specified as particular modality of predictive policing related to individuals.

2.1 Intelligence-Led Policing (ILP)

At the beginning of the century, policing activity was mainly based on the so called 'professionalization' method made up by three elements: a) police departments should focus on crime suppression; b) do so objectively and scientifically free from politics, and c) the authority should be centralized and rationalized. By 1990 policing changed to the 'community policing' approach. Basically, it broadened its scope to other goals in consultation with the public rather than only targeted towards crime control (Sklansky, 2011, 1-2).

A further advancement by the end of 1990 is intelligence-led policing (ILP) (also called intelligence-driven policing). The latter can be considered a relevant switch in policing as well as a landmark in the development of the subsequent predictive policing scheme. The term 'intelligence-led policing' was originally developed in its prime version by the Kent Constabulary (UK) in response to property-related offences (e.g. burglary). Police enforcement in that area believed that focusing on the most prevalent offenses occurring in their jurisdiction could optimize agents' intervention. After these measures were taken, there followed a considerable drop in crime over next period. A more advanced application was seen in the USA. ILP has benefited from the development of the so called 'fusion centers', which offer multiagency policing assistance to the police staff. These centers are able to provide information to patrol officers, management and agencies on specific criminals. For example, specific applications of ILP are supporting anti-terrorism and other crime-specific objectives. In this way, fusion centers shall also provide their own intelligence products based on analysis of trends and other items of information (Peterson, 2005, 8).

A definition of ILP has been coined by Ratcliffe: "Intelligence-led policing is a business model and managerial philosophy where data analysis and crime intelligence are pivotal to an objective, decision-making framework that facilitates crime and problem reduction, disruption and prevention through both strategic management and effective enforcement strategies that target prolific and serious offenders" (Ratcliffe, 2011, 89).

Especially from the US approach, ILP presents four important factors: a) after 11 September 2011 the desire to do something to prevent terrorist attacks; b) necessity to implement ILP with national standards; c) trust in ILP as a fundamental tool to combat crimes beyond terrorism, and last but not least d) ILP as an effective approach to targeting and reducing violent crimes in urban areas (Carter et al., 2014, 435).

According to the U.S. Department of Justice, ILP has to be considered a business process collecting, organizing and analyzing intelligence applied to law enforcement. For this reason, it cannot be interpreted as a new policing model. In other words, it constitutes the enforcement of already existing policing models with a focus on objective analysis of crime and the importance of data as a central strategic point. Nevertheless, "this is window dressing" in Sklansky's words (Sklansky, 2011, at 3). By contrast, Sklansky sheds light on the topic, evidencing big differences between intelligence led-policing and past policing schemes. Quoting Ratcliffe in his analysis, Sklansky explains why ILP has considerably different elements with respect to past policing methods: "intelligence led policing can be understood as a top-down managerially driven approach to crime control" in which "community's concerns are not permitted to perpetually trump an objective assessment of the criminal environment" (Ratcliffe, 2011, 271).

All in all, there are four main elements characterizing ILP: a) targeting offenders; b) management of crime and disorder hotspots; c) investigation of linked series of crimes and incidents; d) application of preventive measures to reduce crime and disorder (Ratcliffe, 2003, 2).

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2.2 From Intelligence-Led Policing (ILP) to Predictive Policing

After the ILP scenario, predictive policing can be considered one step further in policing because it has the claim of being more ambitious and technologically sophisticated.

There is a slight but fundamental difference between Intelligence-Led Policing and Predictive Policing. On one hand, Intelligence-Led Policing is using information to dictate how police distribute their resources strategically. It can be interpreted as "a collaborative enterprise based on improved intelligence operations and community-oriented policing and problem solving" (Paterson, M, 2005, vii). On the other hand, predictive policing aims to predict exactly when and where a crime is taking place and who (almost potentially) will commit that crime.

A real example shall help to shed light on this scenario. Buying little metal balls is a legal activity as well as buying a pressure cooker and a bus ticket for the Boston Marathon, however, to get these items together may generate different types of predictions. Taking into account previous examples, they could strongly indicate that you are going to set off a bomb in a public event. Rather than theoretical hypothesis, those facts constitute exactly the elements of what happened in the Boston Marathon terrorist attack (See link USA Today – 16.04.2013). To be more explicit, the possibility of collecting, monitoring and connecting the dots about probable or highly potential behaviors by people may offer a determinant factor in terms of policing and public security.

As already pointed out, neither prediction can be completely accurate, but the amount of information analysed as well as the huge capacity of processing by software agents (see Schermer, 2007, 17-34) are able to make quite precise predictions. In other words, the predictive policing scheme constitutes a concrete example of 'Big Data' application in law enforcement shaping the development of reasonable suspicion (Ferguson, 2015, 346).

Generally, the growth of such an approach has the capacity to change the reasonableness of suspicion calculus (*Ibidem*, 20) and at the same time raising more delicate questions about the respect of fundamental rights for individuals.

Following this perspective, this paper has the goal of specifically focusing on the predictive policing model applied to individuals, and principally based on networked information and computer algorithms. At a first sight, it could be understood as a futuristic computer-mediated tool able to predict crime before it happens. However, its concrete utilization is much more blurred and complicated.

First of all, we should start with a more specific definition. According to some experts of the U.S. National Institute of Justice: "Predictive policing is the application of analytical techniques – particularly quantitative techniques - to identify likely targets for policing intervention and prevent crime or solve past crimes by making statistical predictions" (Perry et al. 2013, 1).

From one side - applying this scheme in law enforcement - police agencies can benefit from computer analysis and information about past crimes combined with intelligence expertise to predict and prevent crimes. More importantly, high capacity of storage and processing data by computer mediated technologies permit police departments to work more actively, also with limited resources.

On the other side, it is crucial to interpret these kinds of predictions as the result of statistical calculation and data aggregation, which are able to produce nothing more than mere estimates. Consequently, all outcomes must be considered probabilistic or highly probable, but never certain. Due to those objective outcomes, the use of predictive policing forecasts alone will not constitute enough information to justify reasonable suspicion or probable cause to differentiate its interpretation (*Ibidem* at 8 - see more details in Chapter 4).

Looking at its practical applications, some initial results have been successful with a relevant decrease in non-violent crimes in some areas; nevertheless, further testing and implementation need to be fixed for reliability of results (Ferguson, 2012, 267).

With a particular focus on targeting individuals, European countries are also quite addicted to the predictive policing scheme (e.g. see link PredPol software in France). As reported by the Italian newspaper "*Corriere della Sera*" on 27th March 2014, a serial robber was detected and arrested thanks to the

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"KeyCrime" software program, developed by the Milanese police. This software had analyzed the suspect's criminal behavior using an algorithm that cross references hypotheses about human criminal intention and it indicated he would perpetrate that crime. A specific study about his criminal profile, pointed out that the man was responsible for eleven robberies in different pharmacies since December 2013 (see 1.2).

As we can see, predictive policing can be applied to different activities. Some scholars have divided them into four broad categories creating one dedicated taxonomy: 1. *Methods for predicting crimes* (used to forecast places and times with an increased risk of crime); 2. *Methods for predicting offenders* (identifying individuals at risk of offending in the immediate future); 3. *Methods for predicting perpetrator's identities* (creating profiles that match likely offenders with particular past crimes); 4. *Methods for predicting victims of crimes* (used to identify groups or individuals as potential target of criminal offence) (Perry, et al. 2013, 8). This research is mostly oriented to examine in depth such methods that are referring to individuals (e.g. no. 2-3 mentioned above).

2.1.1 A General Evaluation about Positive and Negative Effects of Predictive Policing

More to the point, I can recognize different forecasted elements about the enforcement of predictive policing tools. Without giving a definitive evaluation, it is possible to determine both positive and negative effects. Some examples for the positives: *a) Better accuracy; b) The 'reverse approach' in investigation; c) Reduction of costs for policing* and *d) Crime reduction.* Some for the negatives: *a) False Positives; b) 'Bad data'/Lack of Transparency; c) Reciprocal lack of trust; d) Discriminatory use and effect; e) Shift in power toward the government* (see also in general Ferguson, 2012-2015).

I) <u>Positive effects of predictive policing</u>

a) Better accuracy:

The amount of data obtained from predictive policing tools can benefit law enforcement because of the accuracy it purports to offer. The availability of more precise information on individuals from a real time perspective can offer valuable support for the police to target potential criminals (Ferguson, 2015, 390). What is more, data and related effects change rapidly, as a result, crime reports have to be uploaded into the digital crime registers promptly in order to be useful for police officers on the street, akin to real-time reporting (Perry, et al. 2013, 4, 131).

b) The 'reverse approach' in police investigation:

Considering predictive policing activity as an example of 'Big Data', when we focus on reasonable suspicion of individuals, the same tool could be used also in a reverse approach. In other terms, those applications can also generate an equal number of potentially exculpatory facts. The potential exculpatory nature represents the most positive argument for predictive policing and Big Data advocates (Ferguson, 2015, 392).

c) Reduction of costs for policing:

Efficient use of police resources also constitutes another benefit produced by predictive policing applications. The amount of information available will lead the police to concentrate their resources more efficiently with a special focus on hot-spot targets (Ferguson, 2015, 394). Taking as an example the 'KeyCrime' software utilized by the Italian Police in Milan, it has elaborated a precise estimation about statistics and economic studies. According to the survey: "Since there are about 255 successful first time robbers a year and about one-third reoffend, the reduction of 11 robberies per series leads to a total reduction of 935 robberies (…). Multiplying such number by the average haul (€ 2,800) the direct costs that are prevented by the use of predictive policing are close to € 2.5 million, or more than about US$ 3 million" (Mastrobuoni, 2014, 27).

d) Crime reduction:
Last but not least, thanks to the application of predictive policing tools in law enforcement, a relevant reduction of criminal events has been verified. As registered in Los Angeles in late 2011, property crimes had fallen 12% from the previous year. In Trafford (UK) there had been registered a drop in burglaries around 26% in 2011 (The Economist, 20 July 2013). Coming back to the Milanese software, researches affirm that in 2013 the 74% of criminal events were promptly predicted by the predictive software system (especially about 124 criminal events in banks) with a substantial decrease of crimes of 48% overall (Venturi, 2014, 7).

II) Negative effects of predictive policing

a) False Positives:
A simple definition of false positive or type I error: "A type I error, also known as an error of the first kind, occurs when the null hypothesis (H_0) is true, but is rejected. It is asserting something that is absent, a false hit. A type I error may be compared with a so-called *false positive* (a result that indicates that a given condition is present when it actually is not present) in tests where a single condition is tested for" (See link Wikipedia). In other words, even if the software system holds accurate and precise data, false positives may occur when the police are stopping innocent people. In the majority of cases, the software usually shows individuals with a criminal background but not currently engaged in criminal activity. An example can better clarify this point: a license plate reader will place the car of a convicted burglar within a predicted hotspot, which then happens to be close to the convicted burglar's grandmother's house. The police could stop the suspected individual only for this simple correlation. It is easy to imagine how those individuals listed as suspects will be marked for more than their share of borderline suspicious stops. (Ferguson, 2015, 401).
In addition, the resulting reasonable suspicion could be also associated to human's worse instincts such as discrimination based on race, colour or social class (see Chapter 4).

b) 'Bad data'/Lack of transparency:
This bullet can be considered the other side of the coin for accuracy. There is no doubt that the processing of data by the software program implied for predictive policing is strictly related to the specific algorithm chosen. In more precise terms, we are talking about the role of data mining, also called knowledge discovery (more details in Schermer, 2007, 50-55). Through a strict testing procedure and peer validation it is also possible to evaluate the quality of the data obtained. However, fundamentally, the results need always to be contextualized by professionals in order to balance the objective/technical utility with the reality requested by courts and litigants to consider the reliability of such predictive programs (Ferguson, 2012, 319).

c) Reciprocal lack of trust:
Calling to mind all essential considerations made on 'surveillance society' (see 1.1) such highly digitalized methods could cause a considerable lack of trust amongst government and its citizens. Predictive policing applications can be viewed as the best effort by the government to ensure public security through highly advanced software systems certified as transparent, accurate and reliable instruments. By contrast, this excessive techno-trust can cause relevant social damages. According to some experts: "although government can use transparency as a tool to encourage trust, too much transparency may in fact be at the expense of such trust" (Prins et al, 2011, 78). More specific to the presumption of innocence, there is a noticeable 'reciprocal lack of trust' because it shall be considered from a double point of view: on one side the lack of trust by governments vs. its citizens subjecting them to pre-emptive profiling through data mining process (see 2.4), on the other side there is a similar lack of trust from citizens vs. their governments feeling constantly under observation in a panoptical scenario (see 1.1). An interesting interpretation is offered by SURVEILLE

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Project. The author of the SURVEILLE Deliverable 4.5 paper claims that surveillance techniques are based on a presumption that people are considered untrustworthy. If they appear exaggerated through heavy-handedness or the untrustworthiness of specific groups of people is singled out as suspicious, then they may discourage people from trusting each other. In other terms, the constant and diffused deception of information behind everyday social interactions represent still a reason for interpersonal lack of trust (Hadjimatheou, 2012, 23).

d) Discriminatory use and effect:
The predictive software establishes a determinant factor of risk looking at its massive implementation. There are many examples of how data mining and data-driven law enforcement are perceived as discriminatory with disproportionate effects especially on some groups or communities. In the U.S. for instance the adoption of COMPSTAT program - created to analyse and reduce criminal activities in New York City - is offering important support for policing. On the other side, it was registered that police interventions are largely focused only on certain communities, most of them people of color, poor and residents in the suburbs (Ferguson, 2012, 322). With a focus on data mining, some scholars identified at least three different types of discrimination. The first regards conscious intentions to disadvantage even members of high society because they would be more difficult to detect; the second focuses more on problems with the data mining process itself for errors of the system apparently avoidable; the third concerns the unwelcomed outcomes when data mining enhances specific decision-makers powers of discernment, using different words, the perpetuation of inequality even in absence of prejudice, bias, and error (Barocas, 2014, 3-4).

e) Shift in power toward the government:
Within the European context, the Article 6 ECHR is conceivable as a check on governmental power to limit the actions of public officers which overcome the presumption of innocence and reasonable suspicion standards. However, the huge amount of instantaneous and networked information available to the government via predictive policing operations has the capacity to break this balance. The police gains more power, meanwhile society is losing its autonomy (Ferguson, 2015, 403). In addition, such orientation could be able to modify or almost to influence people's behaviours and interactions in civil society. For instance, in *S. and Marper v. UK* it is stressed the risk of stigmatization against individuals (see Chapter 4). This stigmatization can negatively affect people's confidence and willingness to participate and to engage good relations with others. In some cases, it could lead particularly sensitive individuals to be socially isolated if they are feared from contacts with others. The same effects may occur from outside where other people are avoiding or rejecting them since they are considered criminally suspicious due to surveillance policy. In other terms, the excessive and uncontrolled use of such policing practices can create considerable drawbacks in other aspects of social life (Hadjimatheou, 2012, 6).

2.3 The Prediction-Led Policing (Business) Process

From a broader perspective, predictive policing can be also considered part of a 'comprehensive business process'. Within a more complete scenario, we could shift the current definition into *prediction-led policing (business) process* (prediction + led policing scheme + business cycle perspective). As accurately described by Perry et al., we can see such a process with a four-step cycle: "The **first two** steps are collecting and analyzing crime, incident, and offender data to produce predictions […] The **third** step is conducting police operations that intervene against the predicted crime (or help solve past crimes) […] The interventions lead to a criminal response that ideally decreases or solve crime (the **fourth** step) […] In the **short term**, an agency needs to do rapid assessments to ensure that the interventions are being implemented properly and that there are no immediately visible problems. The **longer-term** criminal response is measured through

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changes in the collected data, which, in turn, drives additional analysis and modified operations, and the cycle repeats” (Perry et al., 2013, xviii).

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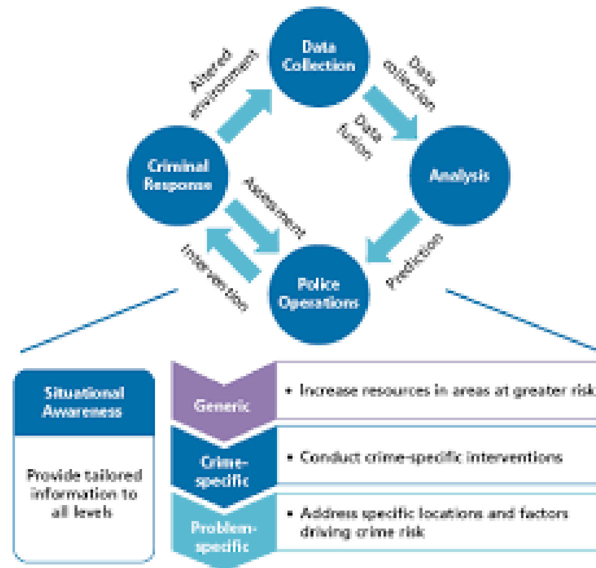

2.4 Pre-emptive Profiling of Individuals

When we are talking about predictive policing applied specifically to individuals, the peculiar definition is *pre-emptive profiling*. Considering profiling as the combination of two trends, like pre-emptive policing and surveillance policing, the profiles obtained represent patterns resulting from a probabilistic processing of data. Due to the fact that they are not describing the reality, but just a projection of such reality, those profiles are based on probabilistic correlations and they cannot be considered causal relations. In other words, inductive pre-emptive profiling is to be considered a key element in the predictive policing model, where particular pre-crime databases (e.g. KeyCrime Software, Milan – Italy, see 2.2) are trying to prevent crime before it happens via digital profiling methods (Van Brakel & De Hert, 2011, 173).

2.5 Provisional Conclusion

Given all features and variations with regard to the predictive policing scheme described above, the main focus of this paper is centred on predictive policing and its peculiar utilisation on individuals by means of pre-emptive profiling.

At this point, I can elaborate an answer to the main question of this Chapter: predictive policing constitutes a new policing method, with a target on individuals and/or delimited geographic areas, based on quantity and networked information of past crime statistics, technology, criminology, predictive algorithms, plus the use of that data to forecast - with high probability but never with certainty – who will perpetrate that crime.

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3. THE PRESUMPTION OF INNOCENCE - ARTICLE 6.2 ECHR

The principle of *presumptio innocentiae* is recognized in many treaties, such as Article 11(1) Universal Declaration of Human Rights, Article 14(2) ICCPR (International Convenant on Civil and Political Rights), Article 8(2) ACHR (American Convention on Human Rights) and last but not least Article 6(2) ECHR (European Convention on Human Rights). It is considered a fundamental principle of law, recognizing the inviolability of human dignity and its limitation from the government's use of power. This principle has already inspired Cesare Beccaria in rejecting the use of torture as investigative power against individuals to obtain a confession before guilt has been established (Beccaria, see Fabietti 1973, 39).

The analysis of the presumption of innocence is a preparatory topic to describe the current legal framework based both on legal standards and likewise on essential case law of the subject. From a European perspective, I will focus on fundamental features of Article 6.2 ECHR then moving to case law analysis at the ECtHR. In the end some key considerations are illustrated.

3.1 Fundamental Features of Article 6.2 ECHR

Generally Article 6 ECHR (see 1.3) determines standards of procedural fairness. In essence, paragraph 1 posits the principle of a fair trial in criminal and in civil proceedings. If the first part constitutes a more generic assumption, the paragraphs 2 and 3 express more specific guarantees in the field of defence in criminal proceedings. Apparently they seem to be of secondary importance, nevertheless, their cumulative effect as a series of procedural shortcomings may seriously affect the person's right to a fair trial (Mahoney, 2004, 111).

The principle of presumption of innocence is specifically stated at paragraph 2 (*Everyone charged with a criminal offence shall be presumed innocent until proved guilty according to law).* It represents a procedural guarantee not only for the criminal trial itself, but also as good practice for pre-trial investigations. It places the burden of evidence on the prosecution and allows the accused the benefit of doubt if his or her guilt has not or not yet been proven according to the law. To put it differently, the presumption of innocence has the significance of implementing the legal protection function into the criminal procedure and also as admonition that depriving the suspect of his liberty should be justified only within the context of such criminal procedure (Stevens, 2013, 248).

Hereafter some basic features of the principle of presumption of innocence are offered.

Firstly, it is fundamental to distinguish the state of reasonable suspicion from statements about guilt or innocence of someone. The state of reasonable suspicion, regarding proof about someone's guilt, could be described as a less strict interpretation of the presumption of innocence. For instance, if someone refuses to testify, the right of a fair hearing (always under Art. 6 ECHR) implies the privilege against self-incrimination and may justify drawing adverse inferences in case they do not constitute a reversal of the burden of proof. As a result, the presumption of innocence shall not be understood as a prohibition on investigating crimes (Hirsh Ballin, 2011, 53). By contrast, especially in the pre-trial phase "the presumption of innocence *shall in abstracto* be considered as a normative notion that controls, rather than hinders, the criminal procedure" (*Ibidem*, 54). Put another way, the presumption of innocence shall be treated as a particular limit to investigative powers in case the suspect is innocent until different evidence could sustain the contrary. The main target is avoiding a situation where such innocent persons would be subjected to explorative, criminal, investigative activities. Following this trend, the presumption of innocence has a regulatory effect prior to trial, in that suspects are treated as being innocent and for which reason the government should generally use restraint in the use of investigative powers (Ballin, 2011, 549).

Secondly, the difference between the meaning of guilt and innocence within the trial phase and in the pre-trial / investigative phase shall herein be emphasised. In the trial phase an individual can be considered guilt only if there is sufficient evidence of his or her guilt - more specifically with the establishment of proof beyond a reasonable doubt - to convict him or her at the court. In the investigative phase the concept of guilt is more centred on suspicion, such as evidence about the possible involvement in criminal activities. In other terms,

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we can observe the following scenario: on one hand, the regulatory impact of the presumption of innocence is oriented to exclude the involvement of innocent people in criminal investigative activities; on the other hand, it aims to include those persons who are still presumed innocent in the procedural sense (*Ibidem*).

In this paper there is given particular attention towards the application of the principle within the pre-trial / investigative phase, with the precise target to observe how digital technologies such as predictive policing tools can influence and shape the enforcement of Article 6.2 ECHR (see also Chapter 4).

Thirdly, in accordance with the European Court of Human Rights case law (see 3.2) it is clearly evidenced how presumption of innocence is a very broad principle and it goes beyond the strict boundaries of a criminal trial. For this reason, we can affirm the existence of an extensive interpretation of this procedural guarantee. More to the point, the presumption of innocence has also a sort of reputation-related aspect to protect the image of the person deemed innocent. There is no room in this research to delve on this reasoning deeply, however, it is mentionable how the presumption of innocence has both a legal and a moral dimension. Precisely, the moral presumption of innocence offers safeguards to the accused from being convicted of a criminal offence when his conduct ought not to be criminal (Galetta, 2013 – Tadros, 2007, 197). Moreover, we can observe other important differences amongst the legal and moral aspect: a) the legal presumption is strictly related to the law, whereas the moral presumption involves political assessment; b) where the legal dimension is more trial oriented, the moral dimension focuses more on the pre-trial phase; c) in contrast with the legal presumption, the moral presumption of innocence pays attention to moral culpability without strict legal relevance (Galetta, 2013).

At this point, we can switch to the case law analysis to individuate peculiar characteristics of such principles according to the European Court of Human Rights.

3.2 Analysis of Case Law on Presumption of Innocence and Reasonable Suspicion

Taking into account the above assumptions, this paragraph aims to offer an overview about the guarantees related to the presumption of innocence at the European Court of Human Rights (ECtHR) and on reasonable suspicion in the pre-trial phase. Because of the problem definition and related research questions of this paper (see 1.4 – 1.5) more attention is given to the pre-trial phase for the enforcement of such principles.

This case law analysis is mainly centred on presumption of innocence at Article 6.2 ECHR with the following bullets:

a) Meaning of reasonable suspicion;
b) Defining offence;
c) Presumption of Innocence and the risk of ‘stigmatization’

The meaning of reasonable suspicion is fundamental to individuate in which terms this procedural guarantee is provided by the Convention and the Court in Strasbourg. For defining offence we need to evaluate limits and features of an offence according to the interpretation at ECtHR. With presumption of innocence and the risk of ‘stigmatization’ I would focus on society risks and drawbacks related to the use of surveillance practices as threat for the principle of presumption of innocence.

For each of them some fundamental case law is illustrated, providing for a clearer picture about the European legal interpretation on the subject.

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a) Meaning of reasonable suspicion

A clearer explanation about the meaning of reasonable suspicion is offered in *Ilgar Mammadov v. Azerbaijan* (judgement of 22 May 2014) and in *Fox, Campbell and Hartley v. The UK* (judgment 30 August 1990) at the European Court of Human Rights.

In *Ilgar Mammadov v. Azerbaijan,* Mr. Ilgar Mammadov was a famous blogger and a political figure of an opposition party in Azerbaijan, running in the November 2013 presidential elections. On January 2013, the applicant travelled to the city of Ismayilli to report on street riots. According to the news, parents of important national and local politician (V.A.) were also involved in the protests even assaulting resident's passengers in other cars. In response, a lot of local residents came to the streets damaging property in Ismayilli thought to be owned by families of politicians including a hotel. Following the events, Mr. Mammadov described all facts in his blog supporting the view that such public disorders were cause by corruption and insolence of the public officials. Just after the publication of the post, the information cited by him about the official website of the Ministry of Culture and Tourism was removed, however his post was spread considerably in the media. Given the blurred situation on riots, also Mr. Mammadov was under investigation for having made appeals to local residents aimed at social and political destabilisation. Later on, in February 2013, the applicant was charged with the offences of organising or actively participating in behaviours against the public order, but no mention was made of his face-to-face confrontation with residents in the city. The pre-trial detention in prison was repeatedly extended and his appeals against the personal restriction measure were always rejected by the domestic courts. In April 2013, his charges were changed to the offence of resistance or violence against public officials which provides heavier punishment according to the law. Finally convicted and sentenced to seven years' imprisonment, his appeal is still pending at the court. Lastly, the applicant's nomination as candidate for the presidential elections was refused for bureaucratic infringements (see *Ilgar Mammadov v. Azerbaijan*, p. 1-14).

Looking at the legal motivations of this decision, the ECtHR affirmed the requirement that reasonable suspicion is when a criminal offence has been committed with the presupposition that facts and information are able to satisfy an objective observer that the person concerned has committed such offence. As we can see: "the requirement that the suspicion must be based on reasonable grounds forms an essential part of the safeguard against arbitrary arrest and detention. The fact that a suspicion is held in good faith is insufficient. The words 'reasonable suspicion' mean the existence of facts or information which would satisfy an objective observer that the person concerned may have committed the offence. What may be regarded as 'reasonable' will depend upon all the circumstances" (see *Ilgar Mammadov v. Azerbaijan*, p. 21 at § 88). More to the point: "The Court notes that the applicant in the present case complained of the lack of 'reasonable' suspicion against him throughout the entire period of his detention, including both the initial period following his arrest and the subsequent periods when his remand in custody had been authorised and extended by court orders" (*Ibidem*, p. 22, at §90). In the end, in absence of satisfactory evidences about criminal responsibility upon the applicant, the Court established an infringement on reasonable suspicion based on a violation of Article 5.1 ECHR.

Another important aspect on the meaning of reasonable suspicion is underlined in *Fox, Campbell and Hartley v. The UK* (judgment 30 August 1990). Mr. Fox and Ms. Campbell were separated husband and wife. In February 1986, they were stopped by the police then arrested and questioned because both were suspected of involvement and membership of Provisional IRA (Irish Republican Army). Also Mr. Hartley was arrested at home some months later for the same reasons. All applicants were successively released, however all complained about their detentions (see *Fox, Campbell and Hartley v. The UK*. p. 3-4). In this case, the Court clearly recognised that what may be regarded as 'reasonable' will depend upon all the circumstances of the case. In other terms, the ECtHR recognised a need to strike a balance between the defence institutions of democracy in the common interest and the guarantee of individual rights. As stated at § 32: "The 'reasonableness' of the suspicion on which an arrest must be based forms an essential part of the safeguard against arbitrary arrest and detention which is laid down in Article 5 § 1 (c) (art. 5-1-c). The Court agrees with the Commission and the Government that having a 'reasonable suspicion' presupposes the existence of facts or information which would satisfy an objective observer that the person concerned may

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have committed the offence. What may be regarded as 'reasonable' will however depend upon all the circumstances". In the end, the Court accordingly holds that there was an infringement of the reasonable suspicion based on a breach of Article 5.1 ECHR.

In a nutshell, reasonable suspicion is when a criminal offence has been committed and there are enough elements to satisfy an objective observer about the guilt of the offender. Furthermore, the fact that a suspicion is held in good faith is insufficient (*Ilgar Mammadov v. Azerbaijan*). Lastly, what may be regarded as 'reasonable' will depend upon all the circumstances of the case (*Fox, Campbell and Hartley v. The UK*).

b) Defining offence

Also the term 'offence' has an autonomous meaning with many versions amongst different countries. For this reason, the national law has a deep influence with regard to legal interpretation. Within this context an important interpretation is offered in *Guzzardi v. Italy* (judgment 6 November 1980). Mr. Guzzardi was convicted for abduction of a businessman and sentenced to eighteen years imprisonment. He was arrested on the island of Asinara (Italy) and placed under supervision with the obligation to reside in that area. Due to the particular situation of that location, the applicant was housed in many different provisory establishments, with significantly reduced opportunities for social contacts. He was put under special supervision with additional serious restrictions on the use of communications, visits and medical treatments (*Guzzardi v. Italy*, p. 3-13). At the end of the judgement, the ECtHR affirmed that to be able to determine if an individual has been deprived of his liberty according to the reasonable suspicion rationale at Article 5.1 of the Convention, all persons' concrete situations and other criteria like type, duration and effects of the measure considered shall be taken into account. According to the decision the offence must be specific and concrete: " 'to secure the fulfilment of any obligation prescribed by law' the law permits the detention of a person to compel him to fulfil a 'specific and concrete' obligation" (*Ibidem*, p. 34, at § 101).

After that, there is established a very important point: detention for propensity to commit a crime is not allowed in respect of the ECHR. Taking into account what is established at Article 5.3 on reasonable suspicion - *Everyone arrested or detained in accordance with the provision of paragraph 1 (c) of this Article shall be brought promptly before a judge or other officer authorised by law to exercise judicial power* – the decision explains in these terms: "the phrase under examination (see Article 5.3 above) is not adapted to a policy of general prevention directed against an individual or a category of individuals who, like mafiosi, present a danger on account of their continuing propensity to crime; it does no more than afford the Contracting States a means of preventing a concrete and specific offence. This can be seen both from the use of the singular (...) and from the object of Article 5 (art. 5), namely to ensure that no one should be dispossessed of his liberty in an arbitrary fashion" (*Ibidem*, p. 35, at § 102).

As I will describe further within the field of surveillance and predictive policing in particular, this case law shall offer a determinant interpretation of how to deal with presumption of innocence.

c) Presumption of Innocence and the risk of 'stigmatization'

According to the strict interpretation of Article 6.2 ECHR only those who are charged with a criminal offence shall be presumed innocent until proven guilty according to law. Because of this, we can see a limited applicability of the presumption of innocence, particularly in the pre-trial contexts of our surveillance societies. As already stressed when I talked about the 'surveillance society' (see 1.1) the digital surveillance tools are not only targeting criminals, but society as a whole in which their purposes go far beyond merely criminal proceedings. The use of surveillance practices, implemented both within and outside the scope of criminal trials are causing the gap in the application and enforceability of the principle of the presumption of innocence (Galetta, 2013). Nevertheless, in other ECtHR cases (e.g. *Allenet de Ribemont v. France*), the Court already recognized that the presumption of innocence could be violated not only by a judge or court

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but also by other public officers. As a result, the presumption of innocence shall be extended beyond a strictly procedural guarantee to protect the image of the person presumed innocent.

Within this scenario, there is a strong link between Article 6.2 and Article 8 ECHR as precisely described in *S. and Marper v. United Kingdom* (Galetta & De Hert, 2014, 290). This case regards two individuals named Mr. S. and Mr. Marper. The former was arrested in January 2011 at 11 years old, before being acquitted in June 2011. The latter was arrested in March 2011 and further acquitted in June 2011. Immediately after the arrest, their fingerprints and DNA samples were taken by the police officers under the guidance of the Police and Criminal Evidence Act of 1984 (see judgment 4 December 2008, p. 3-7). Although the applicants complained only under Article 8 for the retention of their data and biological samples, and thus not invoking the infringement of Article 6.2 of the Convention, the ECtHR referred to the presumption of innocence in the context of an acquittal judgment. In other words, the Court established that the indefinite retention of the applicants' fingerprint, cellular samples and DNA profiles evidenced the fact that the claimants were considered convicted individuals and creating the perspective of their non innocence with a serious risk of 'stigmatization'. As stated at § 122: "Of particular concern in the present context is the risk of stigmatisation, stemming from the fact that persons in the position of the applicants, who have not been convicted of any offence and are entitled to the presumption of innocence, are treated in the same way as convicted persons. In this respect, the Court must bear in mind that the right of every person under the Convention to be presumed innocent includes the general rule that no suspicion regarding an accused's innocence may be voiced after his acquittal". In the end, the Court recognised an infringement of Article 8 for the retention of such elements because it was not considered 'necessary in a democratic society' and also evaluated as "a disproportionate interference with the applicant's rights to respect for private life" (p. 34, § 125).

As we can see, albeit the Court did stress against the risk of stigmatization, the same Court did not expressly extend the legal protection of Article 6 ECHR to the category of suspect. By contrast, it used Article 8 as key to amplifying the applicability of the right not be presumed guilty over the legal framework of criminal proceedings, with particular regard to the increased threat to the presumption of innocence due to surveillance systems and enforcements (Galetta & De Hert, 2014, 290 – see also Galetta, 2013).

3.3 Provisional Conclusion

Taking into account those thoughts and statements illustrated above, I recognise these final considerations in relation to the presumption of innocence at Article 6.2 ECHR.

First of all, it is a fundamental right and a procedural guarantee (see 1.4). Benefit of the doubt shall be considered if guilt has not or not yet been proven according to the law (see Article 6 paragraph 2 ECHR). Apart from strict legal analysis this principle has a further moral assumption (see 3.1). In relation to ECtHR case law, other specific elements are corroborating the current interpretation of the presumption of innocence and related procedural guarantees (see 3.2). Just to offer a brief recap, I observed the following features: a) There is reasonable suspicion when a criminal offence has been committed and there are enough elements to satisfy an objective observer about the guilt of the offender. In addition, the fact that a suspicion is held in good faith is insufficient (*Ilgar Mammadov v. Azerbaijan*). Moreover what may be regarded as 'reasonable' will depend upon all the circumstances of the case (*Fox, Campbell and Hartley v. The UK*); b) The offence must be 'specific and concrete' (*Guzzardi v. Italy*); c) According to Article 6.2 ECHR, only those charged with a criminal offence shall be presumed innocent until proved guilty according to law. In particular the ECtHR in *S. and Marper v. United Kingdom* used Article 8 as key to extending the applicability of the right not be presumed guilty over the legal framework of criminal proceedings. Particular regard is given to the increased threat to the presumption of innocence due to surveillance systems and enforcements against the risk of 'stigmatization' (see 3.2).

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4. THE IMPACT OF PREDICTIVE POLICING ON PRESUMPTION OF INNOCENCE AND REASONABLE SUSPICION

In the third Chapter we have identified relevant principles in relation to presumption of innocence and reasonable suspicion. At this point those general principles will be applied to predictive policing to reach a clearer picture on the issue.

Two specific questions should be addressed in order to understand the relation between predictive policing, presumption of innocence and reasonable suspicion according to the Convention and the ECtHR.

Firstly: *what is the impact of the predictive policing model on individuals, in particular regarding the principle of presumption of innocence (Article 6.2 ECHR)*?

Then secondly: *Is predictive policing compatible with the current interpretation of Article 6.2 ECHR*?

4.1 Presumption of Innocence, Reasonable Suspicion and Predictive Policing

As pointed out by some scholars, it is quite early to evaluate if predictive policing is applicable in all kinds of circumstances. Much more time and studies in different environments shall be made on predictive policing in order to examine the predictive reliability of the model tested (Ferguson, 2012, 304).

Meanwhile, the main target of this paper is to understand whether the predictive policing enforcement applied on individuals is allowed under the respect of the presumption of innocence at Article 6.2 ECHR, plus the reasonable suspicion reasoning. At this point, I will try to provide a reasonable explanation to both research questions already mentioned.

4.1.1 What is the Impact of The Predictive Policing Model on Individuals, in Particular Regarding the Principle of Presumption of Innocence (Article 6.2 ECHR)?

One short premise looking at the first research question shall first be necessary. Due to a huge development of software technologies and the variety of applications offered by the predictive policing model, it is not possible nor even reasonable to adopt a common general assumption on this issue. The applications are multiple and their developments are sudden, which is why the most valuable assessment within this scenario is trying to follow a case-by-case approach. Predictive policing technologies can only implement and not entirely represent the complexity of circumstances for reasonable suspicion, also with a direct effect on the presumption of innocence. In addition, every criminal case cannot be evaluated by the predictive policing software as such, by contrast it must be corroborated by direct police staff observation within a quick time frame to prevent loss of information (see also Ferguson, 2012, 303).

Taking into account both positive and negative effects of predictive policing described above (see Chapter 2), this section aims to target relevant impacts on individuals with regard to the principle of presumption of innocence.

I) <u>Positive effects of predictive policing on presumption of innocence</u>

Considering the positives, better accuracy and the ‘reverse approach’ in police investigation merit some particular consideration.

The *better accuracy* of data obtained by predictive policing tools can benefit law enforcement because of the accuracy it purports to offer in police investigation. The availability of more precise information on individuals in a real time perspective can ensure valuable support for the police in targeting potential criminals. Historically, policing activities have often been based on clues and instincts from the professionals. These evaluations were also influenced by implicit human bias, strictly personal evaluations and policing traditions. In other words, policemen like every human being, are not immune to errors and imperfect

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assessments. For all these reasons, more information about an individual should offer a more reliable prediction (Ferguson, 2015, 390). Considering the impact on individuals in relation to the principle of presumption of innocence, I could foresee how the importance of more accurate data may prevent the infringement of procedural guarantees caused by police officers' mistakes, principally if influenced by social prejudice or discrimination on certain groups of people (see 3.2 & 4.1.2).

With the *'reverse approach' in police investigation*, I have already pointed out how predictive policing as an example of a 'Big Data' tool could be also used in a reverse approach to generate potentially exculpatory facts on individuals. Looking at the impact on individuals in relation to the presumption of innocence, there is one fundamental consideration: also the existence of exculpatory information should be evaluated and balanced into the totality of circumstances with the same importance as dangerous, suspicious factors (Ferguson, 2015, 392). In other words, such reverse approaches shall have considerable weight in order to individuate criminals as well as exclude wholly innocent people during policing activities. To conclude, there is no doubt that such improvement could influence how to interpret the principle of presumption of innocence in law enforcement.

II) <u>Negative effects of predictive policing on presumption of innocence</u>

With regard to the negative aspects of predictive policing, all bullets mentioned above are quite determinant (see Chapter 2), nevertheless from my point of view, three of them deserve a special remark: 'Bad data'/Lack of transparency; Discriminatory use and effect; Shift in power toward the government.

Starting with *'Bad data'/Lack of transparency*, I have already stressed how this can be considered the other side of the coin as accuracy of data. Focusing our analysis on the enforcement of the presumption of innocence and individuals, unsuccessful and even dramatic mistakes on persons' identities for example can cause hard negative impacts on liberty of the individuals - e.g. Kowsoleea's case in the Netherlands - (van der Hof, Groothuis, 2011, 22). More directly, as clearly stated by Justice Ginsburg: "Inaccuracies in expansive, interconnected collections of electronic information raise grave concerns for individual liberty. The offense to the dignity of the citizen who is arrested, handcuffed, and searched on a public street simply because some bureaucrat has failed to maintain an accurate computer data base is evocative of the use of general warrants that so outraged the authors of our Bill of Rights" (*Herring v. United States*, 2009). Thus, there is no doubt how this qualitative aspect can also undermine both presumption of innocence and reasonable suspicion theories. To be more explicit, potential bad data and connected lack of transparency within the data-mining process could have a massive influence on those procedural guarantees, particularly in the pre-trial phase. Furthermore, such mistakes on data would not be limited to the police investigation phase, but it could even be spreadable through subsequent procedural phases in front of prosecutors and courts (Ferguson, 2015(b), 681).

As we can see the *discriminatory use and effect* of predictive policing against some groups of people has been sufficiently proved (see Chapter 2). It goes without saying that such discrimination on those communities takes us to the constitutional equities discussion and fundamental rights protection (see Chapter 3).

Indiscriminate and massive utilisation of predictive policing tools could deeply modify policing and investigative evaluations without giving importance to relevant contextual elements, or even worse create practices of presumption in policing exclusively based on processing of data by software. In theory, objective data-driven law enforcement should reduce, not increase the discriminatory effect of certain policing activities. However, data-driven law enforcement can have also a disproportionate effect on some specific communities that perceive it as discriminatory (Ferguson, 2012, 322 - more details *infra*). According to this perspective and the current state of the Convention, the Article 6.2 ECHR is seriously under threat, as well as the essence of the reasonable suspicion principle. For a complete projection of such infringements we need to go further and observe the risk of 'stigmatization' on individuals as pointed out in *S. and Marper vs. UK* at the ECtHR (see 4.1.2).

Last but not least the *shift in power toward the government*. We have seen how the Article 6 ECHR constitutes a check on governmental power to limit the actions of public officers, which overcome the

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presumption of innocence and reasonable suspicion standards. While the police gain more power, society is losing its autonomy (Ferguson, 2015, 403). As generally described by Agamben in the field of surveillance society (see 1.1), temporary suspensions of civil rights, increases in police powers, and grants of unlimited executive power have shifted gradually into permanent structures of governance, in which, due to fears of safety contemporary states have particularly shifted from politics to policing and from governing to managing using electronically enabled surveillance systems (Stone, 2012, 153). Processing such trends into the impact of predictive policing on individuals and the principle of presumption of innocence, there is no difficulty in recognizing serious risks for the Article 6.2 ECHR infringement. Such tendency of moving toward the government could seriously alter the interpretation of this procedural guarantee or even reduce the legal protection of the individual based on such norm.

4.1.2 Is Predictive Policing Compatible with the Current Interpretation of Article 6.2 ECHR?

At the moment, there is no specific case law in Europe with regard to predictive policing and presumption of innocence. Nevertheless, we can approach a provisional opinion on the issue interpreting the most relevant cases at the ECtHR concerning presumption of innocence and reasonable suspicion as fundamental rights of the individual.

To reach an answer, it is necessary to re-read Article 6 ECHR and all legal requirements evidenced in the case law analysis presented above (see 3.2) and make a comparison through the lens of predictive policing.

One more time, this evaluation cannot be considered as a 'golden rule' interpretation on this issue. Because of the highly fragmented nature of predictive policing software programs characterized by different algorithms and applications, every evaluation should be interpreted with a case-by case approach. However, considering the Milanese software tool as a suitable example, and taking into account individuals in the pre-trial phase, some key bullets are pointed out following the ECtHR jurisprudence mentioned above: a) Meaning of reasonable suspicion; b) Defining offence; c) Presumption of Innocence and the risk of 'stigmatization. In the end, a distinct reference (d) is given to 'the paradigm shift' in criminal law within the predictive policing context.

The meaning of reasonable suspicion is fundamental to individuate in which terms this procedural guarantee is provided by the Convention and the Court in Strasbourg, then comparing such perception with the predictive policing scheme.

Moving further to defining offence we need to evaluate limits and features of an offence in order of being considered in respect of the ECtHR legal orientation.

With presumption of innocence and the risk of 'stigmatization' I would focus on societal risks and drawbacks related to the use of predictive policing techniques that may threat the principle of presumption of innocence. Through the study of *S. And Marper v. UK*, I want to stress the risk of stigmatization against individuals when policing methods are considered 'not necessary in a democratic society'.

On the whole, there is a common target to individuate: when is it permissible to arrest someone on the basis of predictive policing tools? Which kinds of data can be used by police officers according to that data made available by the predictive algorithm?

Each one of these following points is particularly relevant for this research.

a) Meaning of reasonable suspicion:

Looking at *Ilgar Mammadov v. Azerbaijan* and *Fox, Campbell and Hartley v. The United Kingdom* described above, the reasonable suspicion theory is based on this assumption: an already committed criminal offence requires facts and information able to satisfy an objective observer that the person concerned has committed such offence. With regard to reasonable suspicion and predictive policing I have a couple of considerations.

At first, a precise committed offence is required by the Court to satisfy this requirement. Antithetically, the essential aim of predictive policing is to predict or forecast with high probability that the crime will be

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committed. There is a distinct interpretation about the fundamentals of criminal law in challenging the principle of cause-effect, currently not configured in the architecture of Article 6 ECHR. In other words, the current structure of Article 6 ECHR is based on a reactive framework where the law enforcement acts in consequence of the commission of a crime. On the other hand, surveillance methods such as predictive policing follow pre-crime models in which intelligence and preventive actions are exercised before the criminal event. As a result, this new surveillance paradigm is not even integrated in Article 6 ECHR, which is the reason why such norms do not provide satisfactory answers to violations caused to the principle of presumption of innocence perpetrated by surveillance systems (Galetta & De Hert, 2014, 291).

Secondly, the predictive forecasts have to be seen as an extra source in policing, necessary to be evaluated and contextualized by public officers to reach such reasonable suspicion (see 4.1.1).

As fundamental reasoning in this argument, the use of predictive policing forecasts alone will not constitute enough information to justify reasonable suspicion or probable cause for a modification of its interpretation (the same is for the U.S. law - see Ferguson, 2012, 288).

To give more reasons for this trend, a report on surveillance by the House of Lords points out that the increased emphasis on record-keeping and centralized databases by the government affects the presumption of innocence by making anyone a target of suspicion. One recent declaration made by Norris shed light on this point: “Mass surveillance promotes the view ... that everybody is untrustworthy. If we are gathering data on people all the time on the basis that they may do something wrong, this is a view that as citizens we cannot be trusted” (Van Brakel & De Hert, 2011, 177). In this way the idea of reasonable suspicion is completely reformulated, in which all individuals can potentially be targeted.

In the end, as pointed out by Ferguson once more, four precise points shall be evidenced: 1) no matter the type of predictive data, the information alone is never enough to determine the reasonable suspicion analysis. To be more explicit, I have already mentioned how the information given by predictive policing tools is relevant only within the totality of circumstances and must be supervised by direct police officers observation; 2) the predictive information must be particularized (e.g. person, profile, place) in such a way that can be directly related to the suspected target; 3) the predictive information must guarantee enough precision able to separate targeted person, profile or place from others not targeted; 4) the predictive information is time-sensitive it requires to be acted quickly otherwise it will be lost (Ferguson, 2012, 303).

All these points are supporting the view that predictive policing is mostly modifying the meaning of reasonable suspicion, in which standard interpretations also provided by the ECtHR jurisprudence give less protection than originally designed, eroding individual guarantees in a constantly evolving combination of circumstances.

In the end also in this specific case, there is no coherence between the concept of reasonable suspicion offered by the ECtHR and its practical enforcement into the predictive policing context.

b) Defining offence:

To defining offence I have analysed *Guzzardi v. Italy*, in which offence must be specific and concrete ‘to secure the fulfilment of any obligation prescribed by law’ (Article 5.1 ECHR see 3.2). Most importantly, it is established that detention for the propensity to commit a crime is not allowed in respect of ECtHR case law. (details at § 102). In my opinion, this case law shall offer a very relevant interpretation through the lens of predictive policing and surveillance systems within two bullets: 1) how to consider ‘specific’ and ‘concrete’ offences in respect of ECtHR legal orientation; 2) to highlight that detention of an individual cannot be based on the propensity of an individual to commit a crime.

Regarding the former feature, due to the pre-emptive perspective on criminal offence, I can evidence that much more importance is given to the role of technology rather than to a legal definition of offence as such. Due to a lack of specification about the pre-trial phase guarantees in Article 6 ECHR, more emphasis is given to the specificity requirement (also called selectivity) concerning the surveillance technology applied. In other words, it can be defined as the technology’s ability to exclude non-relevant cases correctly, in which characteristics of the individual, organisational settings and test criteria will give different outcomes (Ball,

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Murakami Wood, 2006, 28). As we have already seen, on the one side it is also a matter of accuracy of data, on the other side related drawbacks about false positives and lack of transparency (see Chapter 2).

Concerning the second aspect, the predictive policing rationale as such represents a reverse observation on the propensity of an individual to commit a crime. According to *Guzzardi v. Italy* this prohibition was based on evaluations of past crimes perpetrated by the offender in other judgements. On the contrary, here we are focusing on predictions, most of them based upon information collected in the pre-trial phase or even before that, not related to past judgments. What is more, it is essential to remember that these predictions are the outcome of statistical calculation and data aggregation which are producing mere estimates. All outcomes must be considered probabilistic or highly probable, but never certain (Perry et al. 2013, 8). One more time, the use of predictive policing forecasts alone will not constitute enough information to justify reasonable suspicion or probable cause to differentiate its interpretation (see Chapter 2).

Overall, predictive policing forecasts are shaping meaning and enforcement of those procedural guarantees. As already pointed out in this paper, such legal standards often assure less protection than originally designed also because they are subjected to a constantly evolving circumstances test (see also in Ferguson, 2012, 313).

In sum, also within this requirement, the traditional legal framework cannot adhere to the predictive policing scheme. As a result, the use of predictive policing projections alone will not constitute sufficient information to justify reasonable suspicion or probable cause for a modification of its interpretation.

c) Presumption of Innocence and the risk of 'stigmatization':

Looking at *S. and Marper v. United Kingdom*, we have seen a strong (indirect) link between Article 6.2 and Article 8 ECHR. The Court stressed the risk of stigmatization against individuals in cases of policing methods considered 'not necessary in a democratic society'. On the one hand the ECtHR extended the protection of Article 6 ECHR to suspects, on the other hand it has applied Article 8 ECHR as a picklock to extend the applicability of the right not be presumed guilty over the use of surveillance systems and enforcements into the legal framework.

To clarify this point some harm resulting from criminal stigmatization by surveillance can be mentioned according to the SURVEILLE Project. First of all, individual humiliation in which single persons came out most visibly for scrutiny. Secondly, individual alienation such as racial profiling. Thirdly, individual mistrust and reduced willingness to cooperate with authorities plus reduced security within society may imply the strongest suspicion of criminality. In addition, individual exposure to future measures of suspicion by police and greater risks of discrimination and social exclusion (e.g. pre-emptively associating an individual with serious wrongdoings). One step further is reduced equality and social cohesion crisis overall, for example, definitively labelling a person or a group of people over a long period of time, when such preconception is very difficult to remove. In contrast to those considerations, the right to be free from stigmatisation would leave potential victims exposed to more serious crimes (Hadjimatheou, 2012, 9-10).

Once more there is a lack of interpretation on the presumption of innocence requirements in the pre-trial phase. Within this framework, one solution could be an extended interpretation of such presumption to take in persons who have not been charged, plus taking into account epistemic purposes and broader significance from a civic trust perspective. (Campbell, 2012, 33). At first sight it might seem that the label of suspect or accused can affect a person's culpability increasing the gap with wholly innocent people that never come to the attention of the police, but in reality - apart from demonstrated stigmatization - this does not constitute an infringement of the presumption of innocence. In other words, such presumption is undermined only in case the state is usurping the role of criminal courts bypassing procedural guarantees for the individual through the creation of a hidden criminal law framework (*Ibidem*, 34).

To reach a conclusion on this theme, the risk of stigmatization because of predictive policing's massive use on society is sufficiently proved, nevertheless, in absence of definite legislation as well as ECtHR case law on such issue, Campbell's idea that there is no breach of the presumption of innocence may represent a reasonable answer to fill this gap.

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As a positive aspect, particularly relevant is the use of data-driven suspicion by police officers, which can be documented beforehand. In such a manner, the police could demonstrate all steps taken to investigate a suspect by producing records resulting from central databases. In these terms, the police can replace the ex-post justification with an ex-ante activity for a stop and search measure on the individual. Practically speaking, this record has the potential to limit whom police stop as well as to facilitate a judge's determination of an officer's reasonable suspicion with more evidence in support. This is a matter of accountability, especially for police personnel, where the documented history of Big Data searches can be compared with the motivations provided for a stop and search. In this way, the police administration could develop better training tools and ensuring accountability measures (Ferguson, 2015, 393).

Conversely, looking at negative aspects of predictive policing within the stop and search argument, false positives could be verified when the police are stopping 'wholly' innocent people. Often the predictive software shows individuals with a criminal background but not currently engaged in criminal activity. As already pointed out with the example described above, the police could stop the suspected individual only for the simple correlation between a predicted hotspot, collected information on a convicted burglar and the burglar's grandmother's house. It is easy to imagine how those individuals looked at as suspects are going to be considered for more than their share of common references and suspicious hotspots. Again, we have to remember that predictive policing tools alone do not provide enough information to justify reasonable suspicion or probable cause to differentiate its interpretation (see 4.1.2).

d) Are we facing a 'paradigm shift' in criminal law?

All above considered, rather than going deep with researches to see how the pre-emptive software works looking at discretions and how they are examined, it would be crucial a regulatory explanation. Some scholars have already observed a current paradigm shift in criminal law (Koops, 2009). Along with the new focus on prevention and detecting potential suspects, society's structure is being changed. As evidenced by Koops: "This is a fundamental change. In the traditional paradigm, once a dead body was found, the police started looking for traces, witnesses, and other sources of evidence. Now, before a murder is committed, society is compelled to structure its systems in such a way that, should ever a murder be committed, evidence is more likely to be available" (Koops, 2009, 15).

In other words, we are facing a paradigm shift. Where in the current/past paradigm criminal law was interpreted as an instrument of social control in quality of *ultima ratio*, the archetype is slowly being replaced. The balance between repression v. prevention both on individuals and large groups of people are located at a continuum. In the new evolving paradigm criminal law is a first resort to control perceived social risks (e.g. policing methods). To be more precise, this shift has not been completed yet, nor it is desirable, nevertheless the reactive old paradigm is going to be replaced by the preventive one with relevant implications for regulation. In practical terms, this evolution is changing step by step the entire approach of criminal law enforcement. Within this new paradigm, a fuzzy combination of criminal, civil and administrative law is tailoring such a framework. Thus, rather than hang on the old paradigm requirements, the legal doctrine should be revised following a critical analysis considering technological and social developments (*Ibidem*, 16-18).

In order to improve and permit an acceptance of such enforcement, some experts in predictive policing suggested investing in good relationships with the community, improving trust and dialogue with citizens. In other terms, rather than to stop and frisk them it is better to explain the reason of such activity and that the police are trying to reduce the crime in that area. Although it is very difficult to imagine such measures in practice, it was proved as being the most important and lasting benefit of predictive policing (Perry, et al. 2013, 136-137).

Actually, the ECtHR jurisprudence does not offer consistent clarifications on the subject apart from basilar requirements on duration of arrests and difference between suspicion and accusation which are very difficult to apply in the predictive policing scenario. The key switch in this topic is highlighted by the current paradigm transition in criminal law and the threat of discrimination in pre-emptive data. One proposed solution to this

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problem is more accountability for police officers' activities as well as more transparency in predictive policing practices.

4.2 Provisional Conclusion

Considering the potential impact of predictive policing on the presumption of innocence and reasonable suspicion I focused on two main research questions: I) What is the impact of predictive policing on individuals, in particular regarding the principle of presumption of innocence Article 6.2 ECHR; II) If predictive policing is compatible with the current interpretation of Article 6.2 ECHR.

According to the first question, I recalled both positive and negative effects described generally at Chapter 2 and adding a specific reference to the impact of predictive policing on presumption of innocence on individuals. For the positives: e.g. better accuracy and the 'reverse approach' in investigation. For the negatives: e.g. 'bad data'/lack of transparency, the discriminatory use and effect and the shift in power toward the government.

Taking into account the second question in the pre-trial phase, some key bullets are pointed out following the ECtHR jurisprudence analysed above (see Chapter 3): a) Meaning of reasonable suspicion; b) Defining offence; c) Presumption of Innocence and the risk of 'stigmatization. In the end, a distinct reference is given to the 'paradigm shift' in criminal law as interesting element of analysis within predictive policing.

Given the problem definition of this paper - *Is predictive policing allowed given the presumption of innocence as enshrined in Article 6.2 ECHR?* – the answer is threefold:

1) There are both positive and negative potential effects of the predictive policing enforcement on the European legal framework. I believe that the possibility for improved accuracy on data about criminals, a reverse approach in policing with the possibility to exonerate an individual from all charges, a considerable reduction of costs for policing and a demonstrated crime reduction in urban areas constitute very precious supports. On the other hand, I registered some endemic drawbacks such as false positives, bad data/lack of transparency and a reciprocal lack of trust between government and its citizens. In simple terms those negatives are associated with discrimination to particular individuals or groups of people (see 2.1.1 & 4.1.1 – in general Ferguson, 2012-2015).
2) There is a general contrast or lack of coherence between the current ECtHR case law orientation on presumption of innocence and reasonable suspicion with the predictive policing model. Rather than moving to specific details, I realised a fundamental presumption. Currently, the structure of Article 6 ECHR is founded on a reactive framework where law enforcement acts in consequence of the commission of a crime. Conversely, predictive policing is based on pre-crime models in which intelligence and preventive actions are employed before the criminal event. This new surveillance paradigm is not even integrated into Article 6 ECHR, thus such right do not offer adequate answers to violation of presumption of innocence perpetrated by surveillance systems (Galetta & De Hert, 2014, 291). To put it differently, according to Koops, we are assisting a paradigm shift in criminal law. In fact, whether in the current / past paradigm the criminal law was interpreted as *ultima ratio*, this archetype is slowly being replaced by means of technological and social development (see 4.1.3)
3) It is remarkable how the use of predictive policing forecasts alone cannot constitute enough information to justify reasonable suspicion or probable cause for a modification of its interpretation, because statistical calculation and data aggregation are producing mere estimates. Following this reasoning, all outcomes shall be considered probabilistic or highly probable, but never certain (Perry et al. 2013, 8). Overall, the influence of predictive policing on the presumption of innocence and reasonable suspicion principles may constitute clear evidence of malleability of such fundamental guarantees, in which predictive projections has to be seen as extra source in policing, evaluated and contextualized by public officers within a broader perspective (see details at 4.1.2).

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5. HOW SHOULD WE INTERPRET THE LEGAL FRAMEWORK FOR THE FUTURE AND WHAT POSSIBLE CHANGES ARE NECESSARY?

Predictive policing is a new and constantly evolving tool so definitions, applications and evaluations have to be considered alongside the technological developments. At the same time, there is no doubt that technology evolution may also affect the interpretation of presumption of innocence at Article 6.2 ECHR as well as the reasonable suspicion. Looking at the ECtHR case law there are not specific cases based on predictive policing utilization dealing with such principles. Nevertheless some case law precedents on presumption of innocence are suitable to find analogies for a valuable interpretation. On the one hand, the possibility for better accuracy of data and for a significant drop in criminal investigation costs constitute two strong points for predictive policing advocates (Chapter 2). On the other hand, the risk of 'bad data'/lack of transparency can cause serious drawbacks related to discrimination and risk of stigmatization of individuals (see Chapter 4).

Taking into account these last considerations, this Chapter aims to individuate how to interpret predictive policing enforcement from a future perspective to foresee how we should interpret the legal framework for the future and what possible changes are necessary. Using different words, how modern law should face future implications of a changeable technological perspective.

5.1 Predictive Policing Enforcement and Future Aspects Under Discussion

To foresee the future scenario regarding the relationship between predictive policing and the presumption of innocence we have to deal with the role of law on one hand and the role of technology on the other. Taking as an example predictive policing within the broader field of digital surveillance techniques on individuals, I can represent the following projection.

First of all, the law needs to follow the development of technology (surveillance technology in particular). According to the current legal framework and the impact of surveillance the weakness of the legislator to deal with such contrast is evident.

To reduce this gap the solution is twofold: to pay more attention by expanding the applicability of the presumption of innocence, otherwise supporting new regulations concerning the use of surveillance technologies in the field of criminal proceedings.

Following the first rationale, a clearer extension of the scope of the presumption of innocence would imply its enforcement during the pre-trial phase representing a legal guarantee as for the accused as for the mere suspect. The same target could be pursued by the ECtHR in expanding such reasoning, for instance, supporting even the intrinsic moral value to be presumed innocent in line with *S. and Marper v. the UK*. In accordance with the second scenario it would be possible to increase the protection of the presumption of innocence from the development of new provisions on the use of surveillance practices (Galetta, 2013). To give an example with predictive policing tools it would be possible to create different practices for those who have been charged with criminal offences from the so called wholly innocent people.

More concretely: 1) to implement the applicability of the latter principle providing one extra technology-neutral clause to guarantee the enforcement of procedural guarantees also within predictive surveillance tools. In support of this idea, as pointed out by Hildebrandt "technology neutral law sometimes requires technology specific law to redress undesirable disruptions of existing human rights law" (Hildebrandt, 2015, 184); 2) the ECtHR, following the already existing case law presented above, has to shed more light on this lack of interpretation; and 3) in line with *S. and Marper v. UK*, lawmakers especially must guarantee specific legislations, providing to judges and police officers adequate instruments for investigating without infringing fundamental rights of the individual.

Last but not least, although not strictly within the legal framework rationale, the governments shall enhance the relation with its citizens looking for a new dimension of trust or similarly improving the

relationship with the citizenship (Perry et al. 2013, 135). Even the intrinsic moral value of the right to be presumed innocent still requires forward protection (see 3.1).

Moving to the role of technology, Hildebrandt describes it in three different ways. Firstly, a neutral or instrumentalist conception to understand itself as the outcome of applied science without paying attention to its constitutive force for the evolution of science overall. Secondly, a deterministic interpretation of technology which is able to influence human society giving to technology an autonomous force, in other words, giving the assumption that any problem could be resolved by new technology. Last but not least, there is a third version (preferable in our scenario) that can be interpreted as pluralist and relational and refutes the conception of an independent autonomous technology while also ruling out the neutrality of its usage. As pointed out by Hildebrandt "this follows up on Kreutzberg's famous dictum that 'technology is neither good nor bad, but never neutral'" (Hildebrandt, 2015, 179).

Within this landscape, especially within predictive software as a technological application, we have to remember how the use of agent technology instruments on surveillance systems and law enforcement is substantial. On one hand there are no clear legislative solutions which would address the quantitative effects of agent technologies fruitful. On the other hand, when it comes to dealing with the qualitative effects of agent technologies (e.g. accuracy, transparency) they must be addressed with their changes in the existing legal framework. In other terms, when addressing the legal issues we should not disregard the meaning of technological and procedural measures effectuated in the technology itself and with accompanying procedures (Schermer, 2007, 202).

5.2 Predictive Policing and a Future Perspective of Criminal Law

As we have observed in this research the passage from monitoring data to predicting such data, thanks to the increased availability of processing by software algorithms, puts under threat the core principles of criminal law and fundamental guarantees of the individual. In more precise terms, Hildebrandt shows the utilization of computer algorithms for pattern-detection in policing, based on use of Big Data to predict where, how and what types of crime will be committed, constitutes a typical example about the shift from a current information society to a data-driven society (Hildebrandt, 2015, 187).

Within this framework, we have observed in this research how data-driven surveillance shapes and influences the principle of presumption of innocence to predict, almost statistically, the criminal intent of an individual. Following this trend, the approaching data-driven society will be able to erode such presumption of innocence also in relation to the design of the surveillance infrastructure exploited. In other terms, the criminal law will require surveillance systems designed to sustain the presumption of innocence with more transparency, access to algorithms to enable peer review mechanisms, verification of the software to be sure of the knowledge of these systems and lastly ICT citizens' platforms to permit people to foresee how their behaviors could match criminal figures. More to the point, alongside the concept of privacy by design, Hildebrandt suggests the same conception with the necessity of a presumption of innocence by design to contest with efficacy all allegations depending on data-driven criminal profiling. Using her own words: "These types of 'legal protection by design' (…) should re-enable the purposiveness and instrumentality of the criminal law in the face of shifting interactions between inferred 'present futures' and their own *future present*" (*Ibidem*, 195).

5.3 Provisional Conclusion

On the discussion about the predictive policing enforcement from a future perspective, this chapter aims to understand how modern law should face future implications of a variable technological perspective. The starting point is twofold: the role of law on one side and the role of technology on the other. On the role of law, two directions are practicable: to pay more attention to the applicability of the presumption of innocence,

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diversely supporting new regulations concerning the use of surveillance technologies in criminal proceedings. On the role of technology I mentioned three different interpretations and the importance of software agents in qualitative effects of technology (see 5.1).

This chapter ends with a future projection on predictive policing and criminal law. Within the switch from information society to data-driven society I referred to Hildebrandt's idea of 'presumption of innocence by design' as an example of practical solution to the problem (see 5.2).

CONCLUSION

In this research I studied the development of predictive policing as a tool for surveillance. Taking into account the European legal framework, I delved into the potential influence of this model on the principle of presumption of innocence (Article 6.2 ECHR) and on reasonable suspicion.

The main goal of this research has been to identify if predictive policing might be used 'preventively' against potential perpetrators of a criminal offence, or more precisely, whether it represents an allowed policing practice given the presumption of innocence as enshrined in Article 6.2 ECHR.

In the introduction I offered a general explanation about the research structure and the 'surveillance society' concept (Lyon, 2001). In the second Chapter I focused on the definition of predictive policing with its main features. In the third Chapter I analysed the principle of presumption of innocence and reasonable suspicion, supported by relevant case law of the ECtHR. With the fourth Chapter I delved into a more practical and legal reasoning, dealing with the admissibility of the predictive policing tool under the auspices of Article 6.2 ECHR. In the fifth Chapter I presented the subject from a future perspective and looking at possible changes.

In order, in the Introduction I presented the main aspects of 'surveillance society' supported by literature metaphors such as the Orwellian novel 'Nineteen Eighty-Four' (1984) and the Bentham's 'Panopticon' (Lyon, 2001, 7). After a short introduction to predictive policing, followed by a brief reference to the Article 6 ECHR, I presented the problem definition of this research: *Is predictive policing allowed given the presumption of innocence as enshrined in Article 6.2 ECHR?*

To reach a clearer picture about predictive policing, in Chapter 2 I described its main features and developments in three basic steps: intelligence-led policing, from intelligence-led policing (ILP) to predictive policing and the prediction-led policing (business) process. In the end, I specified the meaning of pre-emptive profiling as particular modality of predictive policing related to individuals. Centralizing my research on predictive policing, I recognized both positive and negative general effects. For the positives: better accuracy, a 'reverse approach' in investigation, the reduction of costs for policing and crime reduction. For the negatives: false positives, the 'bad data'/lack of transparency, reciprocal lack of trust, discriminatory use and effect, and a shift in power toward the government (see 2.1.1 & in general Ferguson, 2012-2015). At the end of the chapter, I provided a clearer definition of predictive policing in the following terms: it constitutes a new policing method, with a target on individuals and/or delimited geographic areas, based on quantity and networked information of past crime statistics, technology, criminology, predictive algorithms, plus the use of that data to forecast - with high probability but never with certainty – who will perpetrate that crime (see 2.5).

In Chapter 3, I recognised the structure of the current legal framework on presumption of innocence at Article 6.2 ECHR followed by relevant ECtHR case law on the subject. The presumption of innocence is a fundamental right and a procedural guarantee, in which the guilt has to be proven according to the law. Moreover it has a moral assumption. Looking at ECtHR case law, there is no specific reference based on predictive policing, nevertheless, some case law precedents are suitable to find analogies for a valuable interpretation.

More to the point, I highlighted the following elements: there is reasonable suspicion when a criminal offence has been committed and there are enough elements to satisfy an objective observer about the guilt of the offender, and 'good faith' is an insufficient requirement (*Ilgar Mammadov v. Azerbaijan*); what may be regarded as 'reasonable' will depend upon all the circumstances of the case (*Fox, Campbell and Hartley v.*

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The UK); the offence must be 'specific and concrete' (*Guzzardi v. Italy*); particularly relevant is *S. and Marper v. United Kingdom* in which the ECtHR used Article 8 as key to extending the applicability of the right not be presumed guilty over the legal framework of criminal proceedings with a strong risk of 'stigmatization' for individuals.

At Chapter 4, given the potential impact of predictive policing on the presumption of innocence and reasonable suspicion, I focused on two main research questions: firstly, what is the impact of predictive policing on individuals considering the presumption of innocence at Article 6.2 ECHR; secondly, if predictive policing is compatible with the current interpretation of Article 6.2 ECHR. With regard to the first question, I remarked on some positives effects such as better accuracy and the 'reverse approach' in investigation. For the negatives I recalled, the 'bad data'/lack of transparency and the discriminatory use and effect (see 4.1.1 & in general Ferguson, 2012-2015). In relation to the second question and according to the ECtHR jurisprudence I developed more on some key concepts: the meaning of reasonable suspicion, a definition for offence and the relation between presumption of innocence and the risk of stigmatization for individuals (see 4.1.2).

For all above reasons, I have three main answers to my problem definition: I) There are both positive and negative effects about the predictive policing enforcement into the European legal framework. On one hand, they can represent valuable supports. On the other hand, its drawbacks point towards considerable discrimination to particular individuals or groups of people; II) Generally, there is a contrast or lack of coherence between the ECtHR orientation on presumption of innocence and reasonable suspicion with predictive policing. However, there is a fundamental presumption: the structure of Article 6 ECHR is established on a reactive framework where the law enforcement acts in consequence of the commission of a crime. Otherwise predictive policing is based on pre-crime models, where this new surveillance model is not included in Article 6 ECHR (see 4.1.2). As already pointed out, we are facing a paradigm shift in criminal law (Koops, 2009); III) Finally, the use of predictive policing alone cannot justify reasonable suspicion or probable cause for a modification of its interpretation because its software algorithms are producing mere statistical estimates, but never certain sources (Perry et al. 2013, 8).

In the last Chapter, I centered the discussion surrounding the predictive policing enforcement from a future perspective to understand how modern law will have to deal within a variable technological scenario. There are two pillars in this projection: the role of law and the role of technology. With the former there are two ways: to pay more attention to the applicability of the presumption of innocence, otherwise supporting new regulations concerning the use of surveillance technologies in criminal proceedings. With the latter I illustrated its three interpretations and the importance of software agents (see 5.1). The chapter ends with a specific future projection on predictive policing and criminal law. Within the switch from information society to data-driven society, I mentioned Hildebrandt's suggestion of 'presumption of innocence by design' as example of practical solution to the problem (Hildebrandt, 2015, 195).

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