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Abstract

Although the revolutionary potential of predictive policing has often been exaggerated, this novel policing strategy nonetheless implies something substantially new: the underlying methods of (crime) data analysis. Moreover, these police prediction tools matter not only because of their capacity to generate near-term crime predictions but also because they have the potential to generally enhance police-related data crunching, ultimately giving rise to the comprehensive datafication of police work, creating an ongoing drive for extensive data collection and, hence, surveillance. This paper argues that because of its enablement of crime data analysis in general, predictive policing software will be an important incubator for datafied police work, especially when executed via data mining platforms, because it has made police authorities aware that the massive amounts of crime data they possess are quite valuable and can now be easily analyzed. These data are perceived to be even more useful when combined with external data sets and when processed on the largest possible scale. Ultimately, significant transformative effects are to be expected for policing, especially in relation to data collection practices and surveillance imperatives.

Introduction

Since the beginning of the second decade of this century, a new policing strategy has taken center stage, not only in international media coverage but also in domestic security politics: predictive policing. Often framed with inappropriate references to *Minority Report* and contextualized with partly misleading catch phrases like “big data policing” or “algorithmic policing,” the idea that the police can use digital technologies and sophisticated data mining systems to predict future crimes fascinates many people. However, this futuristic framing should be partly toned down as a closer inspection of contemporary approaches to using predictive policing in live operations reveals that the prediction technologies and their application are much more conventional than their science-fictional references and narrative paradigms imply. In fact, these systems rely on quite ordinary bodies of criminological knowledge, including crime-related rational choice theory, environmental criminology, and crime mapping techniques (see also Wilson 2018a). Additionally, predictive policing conflates several familiar tendencies of policing (see also Wilson forthcoming), such as community policing, problem-oriented policing, place-based policing, situational crime prevention, and intelligence-led policing, plus the ongoing shift toward proactive forms of crime control. Therefore, the innovative potential of predictive policing has often been exaggerated, as the development and implementation of predictive policing, in fact, mark a continuation as well as a fusion of longstanding policing developments that make it more an evolutionary than a revolutionary crime-fighting strategy. When also accounting for recent rapid technological developments in data mining and predictive analytics and the significant drop in the financial costs of data storage and the hardware needed for algorithmic-driven

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analysis of large data sets, the emergence of predictive policing appears as a consistent development that has also been supported by extensive post-9/11 security orientations wherein the dominant political response to perceived (or simply asserted) security risks has been to implement surveillance techniques and increasingly rope in the police for such tasks (e.g., Bloss 2007).

Despite its evolutionary context, there is, of course, something substantially new in prediction-driven policing practices: the digital technologies being utilized and the underlying methods of (predictive) data analysis. This is even truer for German-speaking countries, where the police have only recently begun to use their voluminous crime data collections for further algorithmic-mediated analysis or data mining.

What is particularly new about the novel tools being utilized in policing is their general openness to all kinds of societal data and variables—in quantity as well as quality (Kitchin 2014: 68). This also means that once such a program has been established in a police department—which is, of course, often a quite tedious, not continuously smooth-running process—it is technically very easy to integrate more data and/or more analytical insights in order to expand or specify algorithmic evaluation and decision processes. This applies especially to administrative bodies like police departments where path dependence is an important pattern of institutional development. Path dependence is understood here as an institutional event chain, implying the tendency to stick to already established practices or installed technologies as the costs of introducing new structures are conceived as being disproportionally high. By drawing on the concept of path dependence, it is not intended to neglect the fact that the introduction of technologies in general and of crime prediction software specifically is regularly accompanied by resistance and impediments and that innovations can also fail (Godin and Vinck 2017). However, the longer that police departments try to implement crime prediction software—or even develop it on their own—and the more that enthusiastic leading authorities publicly comment on the software, the higher the limits are for the software in question to be considered bearable even when problems are evident. In addition, path dependence typically has self-enforcing elements, as high levels of commitment to a certain innovation process tend to create pressure to use the innovation as productively as possible (Schreyögg and Sydow 2011). This can imply, for example, that software recently introduced at significant cost is used as extensively as possible and utilized for a wide range of tasks in order to justify the introduction and/or development costs. In this vein, new crime prediction software, as I argue in the following based on the implementation and utilization of crime prediction software in German-speaking countries, matters not only because of its functionality in generating operational, near-term predictions, but also because it has the potential to enhance police-related data mining in general, ultimately giving rise to the platformization of police work.

Following Wilson (forthcoming) and Linder (forthcoming), the platformization of police work is understood as an organizational process in which manifold data sets and databanks—especially from police-external sources—are cross-linked, creating information retrieval and production networks designed to improve police work on numerous levels by facilitating knowledge creation (e.g., patrol allocation, police management, crime investigation, etc.). This trend toward “platform policing” (Wilson forthcoming; Wilson 2018b) is manifest in the German crime prediction software PRECOBS, which is currently being introduced in a relaunched version named PRECOBS Enterprise that fundamentally expands the possibilities of forecast-related as well as general police-related data analysis. Against this backdrop, I argue that especially because of its enablement of multi-dimensional and multi-purpose data analysis, predictive policing software can have serious ramifications for the police work of the future, as it has made police authorities aware that the massive amounts of crime data they possess can be quite valuable for improving not only patrol allocation and crime situation management but also investigative work and other police tasks. Moreover, this ultimately amplifies the “ceaseless thirst . . . to incorporate data fragments from diverse public and private sources” (Wilson 2018a: 123) in policing and, hence, significantly enhances its surveillance potential, as these police data analysis platforms work better when they have more data and can connect with each other.

Essentials and Current Application of Predictive Policing

Predictive policing can be defined as the application of data analysis technologies by the police to generate and effectuate actionable forecasts of sources and spatiotemporal conditions of future crime. This definition implies that predictive policing is a cross-cutting policing strategy, a multidimensional process encompassing not only the generation of crime predictions by algorithmic-mediated data analysis but also the gathering and preparation of input data and the “journey” of the prediction from the police department to its implementation on the street (Perry et al. 2013: 11-15; Bennett Moses and Chan 2018: 807). Therefore, it is not only about producing predictions that are as valid as possible, but it is also about their actionability; even the best prediction is useless if it cannot be effectuated adequately by police forces (e.g., when the spatiotemporal frame of reference is too big). Currently, the dominant state of the application of predictive policing technology is that a specific crime prediction software—like PRECOBS (Gerstner 2018), PredPol (Ferguson 2017), ProMap (Johnson et al. 2009), Crime Anticipation System (CAS) (van Brakel 2016), or HunchLab (Degeling and Berendt 2018)—is used to forecast spatiotemporal parameters of one or more offenses so as to rationalize patrol management, aiming to deter motivated offenders from committing their crimes in the predicted risk areas. However, there have also been some scattered (but growing) attempts to predict person-related crime risks by utilizing social network approaches, as with the Strategic Subject List used by the Chicago Police Department for gang-related crime (Saunders, Hunt, and Hollywood 2014) and with RADAR-iTE (“regelbasierte Analyse potentiell destruktiver Täter zur Einschätzung des akuten Risikos – islamistischer Terrorismus” [rule-based analysis of potentially destructive offenders for the assessment of the acute risk – Islamist terrorism]) developed by the Federal Criminal Police Office in Germany for identifying terrorist attacks by perceived Islamists (BKA 2017). Nevertheless, especially in German-speaking countries, the prediction of domestic burglaries is the dominant form of predictive policing, and there are analytical as well as political reasons for this. On one hand, the near-repeat hypothesis, which is the most prominent explanatory approach translated into algorithmic calculation processes for future crime risks, has been empirically well tested for domestic burglaries (e.g., Pease and Farrell 2017). On the other hand, the rising number of domestic burglaries in Germany has pressured political authorities into taking (symbolic) action. Introducing crime prediction software was perceived as a good way of presenting both a clampdown and innovation (Egbert 2018).

While mostly focusing on just one or a small number of (similar) offenses, often analyzing only police crime data with all its epistemic restrictions and flaws (Maguire and McVie 2017), and typically translating only a few criminological theories into risk-assessment algorithms, a quite basic form of predictive policing is currently dominant. However, we should think about this as a snapshot in time, as the potential of crime prediction software is much greater than that of the software approaches currently being used. A good example of this is the HunchLab software, which predicts crimes in a stricter sense than, for instance, PredPol or PRECOBS as it uses not only police crime data but also data about infrastructure (such as the location of metro stations, bars, and clubs), population density, and socio-economic characteristics (Degeling and Berendt 2018: 349f.). Plus, by following the approach of Risk Terrain Modeling (Caplan and Kennedy 2016), HunchLab utilizes a much more heterogeneous theoretical approach by focusing not on etiological theories of crime but on multidimensional risk classifications for urban areas. By doing so, HunchLab is much less about just projecting spatiotemporal crime patterns from the past into the future and more about predicting genuinely *new* risk patterns for certain areas. Furthermore, HunchLab’s technical approach not only follows key imaginative rationales of big data mining in policing, like “connecting the dots” (McCue and Parker 2003) and unveiling “hidden patterns and relationships” (Beck and McCue 2009), but it also employs sophisticated approaches from artificial intelligence to generate risk predictions (Shapiro 2017: 459). Therefore, HunchLab is currently the most advanced crime prediction approach on the market and, simultaneously, the most probable future of predictive policing, as it represents best the actual potential of predictive analytics for policing perceived by its proponents (e.g., Beck and McCue 2009).

However, besides HunchLab and the related entrance of artificial intelligence into policing, there is another development that supports the notion of future predictive policing as being much more complex and powerful than contemporary tools: the platformization of police work. Moreover, this development was

crucially initiated by the invention of crime prediction software and the attendant implementation of strategies of predictive policing.

From Prediction to Platformization

As already mentioned, the new crime prediction software tools are important not only because of their ability to generate near-term predictions but also because they can generally enhance crime data analysis in policing. This is because the hype around predictive policing—significantly fueled by widespread media coverage and big promises from business representatives (Bond-Graham 2013) as well as leading practitioners (Beck and McCue 2009; Bratton, Morgan, and Malinowski 2009)—created a knock-on effect for police authorities to test and implement crime prediction software. In so doing, especially in those countries where the police had not previously used their data extensively for systematic algorithmic analysis (e.g., in Germany), the police became aware of the epistemic value and strategic potential of (big) data mining and the straightforward as well as cheap ways in which it can be used. In consequence, new ways were and are being looked for in order not only to significantly expand the spectrum of predictable offenses but also to extend non-predictive data analysis to rationalize and improve policing on a more general level. This development, then, gives rise to the platformization of policing. This implies a comprehensive datafication of policing, understood as the development of police work that is increasingly driven by data gathering and data mining with an internal drive toward a stronger interconnection of databanks, data sets, authorities, and offices.

A recent empirical example of the movement toward this kind of data-driven platform policing is the evolution of the German crime prediction software PRECOBS (Pre Crime Observation System). The original version of PRECOBS—now called PRECOBS Classic—was a quite limited, strictly theory-centered, centrally controlled, and indeed straightforward approach of predicting crimes by mainly consulting the near-repeat hypothesis and a rational choice-framed conception of (professional) offenders. As a consequence, it performed a past-oriented forecasting method that Aradau and Blanke (2017) have aptly called “prospective retro-diction” (378). In contrast, the new PRECOBS version, called PRECOBS Enterprise, is much more open to different theories translatable into classification and evaluation algorithms of future crime risks, which significantly expands the spectrum of predictable offenses by moving toward a general risk approach already known from Risk Terrain Modeling. Moreover, PRECOBS Enterprise fundamentally amplifies the possible applications of police-related data analysis by adding analytical tasks that go beyond prediction (e.g., supporting the police in solving crimes by facilitating analysis of journey to crime routines in order to discover the mobility pattern of offenders and identify their possible place of residence) (Middendorf and Schweer 2018). Another important point in connection with PRECOBS Enterprise is that whereas the initial version was used by only a small group of operators, the follow-up software aims to expand the user group by being browser-based and by providing a dashboard solution that is easy to learn and intuitively usable (Okon 2018). This strengthens the move toward a platformization of policing as potentially all police units and officers now have access to a system of data crunching that encourages operators to “play” with the program, testing various correlations or ideas by executing simple point-and-click actions. Additionally, because criminal investigation departments, too, will soon be using PRECOBS Enterprise to solve crimes and convict offenders, the development of cross-linking databases and interconnected police departments will be encouraged by data analyses that reveal connections across police units, scopes, and types of offences, leading to a merging of formerly unconnected data as well as persons. This, again, will most likely result in a trend toward a one-software-fits-all approach, in essence comprising platformization and, going beyond that, a conflation of different databanks in one software that enable interoperability on numerous levels and make it possible for police officers to execute prediction work as well as multidimensional data analysis for the sake of criminal investigations.

Although this aim of interoperability of police databanks is actually not new, the standard information system infrastructure in German-speaking countries is still very much dominated by data silos and selected access permissions—which is why just recently the action program *Polizei 2020* was launched from the interior ministry (FMI 2018), seeking to break down access barriers and to improve the intercommunication

of police authorities. A quite similar case has already been described by Brayne (2017) with reference to the Los Angeles Police Department's use of the Palantir software Gotham, essentially entailing a post-siloed systems approach in policing with the "Palantir platform integrat[ing] disparate data sources and mak[ing] it possible to quickly search across databases" (ibid.: 994). Another analogous case has been presented by Ferguson (2017) with reference to New Orleans, where Palantir software is used to execute a "public health approach to violence" (40f) that embraces the connection of different city databases—containing, for example, details on infrastructure (such as the location of streetlights)—with police data in order to find hidden relationships in these databases. The hypothesis of the ongoing platformization of policing is also confirmed by a press release from ShotSpotter®, one of the leading firms for gunshot detection sensors. Its acquisition of HunchLab to "expan[d] [the] company's platform to deliver data-driven patrol missions and help deter crime" (ShotSpotter 2018) demonstrates that the platformization of policing is, indeed, not limited to German-speaking countries. It is especially the sophisticated algorithmic architecture of current data mining platforms like Palantir's Gotham and its vision of unlimited searchability and automatic pattern detection that mark a relevant difference from old ideas of interoperability in policing.

Platformized Police Work and Big Data Surveillance

Although big data is not only about massive quantities of data but also about corresponding analysis tools (boyd and Crawford 2012: 663, 665), the myth of the omnipotent epistemic power of (big) data is an important point of reference for police authorities when substantiating the potential of big data-fueled policing (Beck and McCue 2009). If this credo of "the more data, the better" is taken seriously for policing, large-scale surveillance will become a fundamental prerequisite of platformized policing because it provides its major currency: data. In this sense, data mining platforms for police have an inbuilt tendency toward function creep.¹ Therefore, data-driven platform policing per se intensifies the need for surveillance techniques and practices, especially by giving rise to the impetus of producing cross-linked databanks and data sets (Lyon 2014: 5; Brayne 2017: 17-20).² In other words, to be able to execute the full potential of data mining for policing, an approach that is as holistic as possible is needed. This means that data-driven policing is about gathering data on as large a scale as possible and interconnecting as many data sets as possible in order to gain actionable intelligence that will allegedly make it possible to fight crime effectively—crime that, in some cases, has not even happened.

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¹ By speaking of an inbuilt function creep, I rephrase an expression from Nikolaus Pöchhacker who introduced the notion of "scripted function creep" with reference to big data-oriented practices in policing at the workshop "Risk Management and Computational Knowledge Production in Legal Systems" at Technical University Munich on November 29, 2018.

² In this sense, platform policing is emblematic of what Lyon and Bauman (2013) have called "liquid surveillance," highlighting the blurring of numerous boundaries in surveillance practices.

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