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Democratic futures: Crowdsourcing incident data

Alistair Sackley, Communities, Hampshire County Council

the **Howard League** for **Penal Reform**

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Abstract

Recent developments in repeat victimisation research include the identification of high risk targets who share similar characteristics to previous victims. This is known as near repeat victimisation or near repeats. The concept of 'nearness' can apply to similar targets encountered in similar circumstances. The result is that the study of repeat victimisation is beginning to merge with other areas of crime concentration. The key issue is the similarity of crimes. A range of research suggests the importance of repeat victimisation for crime prevention is that it provides useful information about the where, when and what, because crimes tend to happen against the same or similar targets, and because, if it is known how the crime happened previously, it can also be known how to prevent its recurrence. Therefore, the question to ask is no longer whether repeat victimisation is relevant to crime reduction, but rather how the mechanisms and contexts that are most helpful in achieving the greatest reduction can be identified. This paper offers a discussion that looks to address and manage crime democratically in real-world contexts based on experience with Hampshire Constabulary and suggests a Web Science perspective to pick apart the ramifications.

Introduction
There is no such thing as an all-purpose crime prevention measure. The most physically secure house or business can be penetrated if the perpetrator can be sure that fear or indifference means no one will raise the alarm, however long the crime takes to commit and however much noise is made during its commission. The most insecure house or business may be safe if located in small, self-confident communities. The most active drug dealer will operate in safety if a community and its police tolerate the trade, or are paralysed by fear of the dealers. Likewise, no public place will be crime free if those who offend have reason to believe that they will not be identified, or, if identified, will not be reported to the police, or, if reported will escape meaningful criminal justice outcomes.

A systematic review of the evidence suggests that repeat victimisation can be prevented and overall crime reduced. The impact on crime varies with the effectiveness of prevention tactics and their implementation. Appropriately-tailored situational crime prevention tactics appear to be most effective, whereas advice and education for victims are often not so effective. Success to date suggests that there is a need for further research into the prevention of repeat victimisation for different crime types; the problems with and upon near repeats; and overcoming implementation problems. The question to ask is no longer whether repeat victimisation is relevant to crime reduction, but rather to identify the mechanisms and contexts that are most helpful in achieving the greatest reduction and how one should use them in combination with other measures to optimise their effect (Bowers et al., 2011; Farrell and Pease, 1993).

1   The Basic Approach
In *Weaving the Web*, Tim Berners-Lee suggested that:

> *Real life is and must be full of all kinds of social constraint-the very processes from which society arises. Computers help if we use them to create abstract social machines on the Web: processes in which the people do the creative work and the machine does the administration.*
> *(Berners-Lee and Fischetti, 1999: 172–75)*

So, is it possible to use crowdsourcing techniques: 'services, ideas or content through the work of a group of people,[1] especially those in online communities whose large, distributed nature paired with potentially 'viral' transmission of information, lend themselves to the concept' (Crowdsourcing.org, 2012, footnote added) or combinations of social networks, to 'prevent crime' in order to help manage the 'social constraint' Berners-Lee talks about?

The outcomes sought must provide real possibilities of assisting the use of modern technology to give an individual or group(s) direct access to and understanding of

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[1] These groups may be amorphous and not-easily identifiable and work for social benefit, as opposed to rigidly organised departments in companies working under specific terms and conditions. Can include division of labour, crowd funding, solving of puzzles, problems and crimes, searches for missing people, cars and planes and the organisation of parties, demonstrations, riots and clean-ups.

complex situations that filter the significant factors and help in solving problems. For example:

(a) Can the documentation of data and computational results for crime prevalence (the proportion of people (or targets) in an area who are victimised (this is used to identify the risk of becoming a victim)) be automated so the community can determine how much confidence to place in them;

(b) Can 'distributive or procedural fairness networks' be constructed that have the potential to repair the trust that is breached by criminal harms and track distribution to protect the most disadvantaged and vulnerable from crime incidence (the combined number of victims and number of crimes per victim*); (Stevens, 2013);*

(c) Can a neo prima facie model be adopted toward crime concentration (the number of victimisations per victim (or victimised place)) that promotes a more victim-oriented approach to incident recording;

(d) Can the range of computational results within communities be extended to realise a desired level of sophistication for their use within human social structures as illustrated in Figure 1.
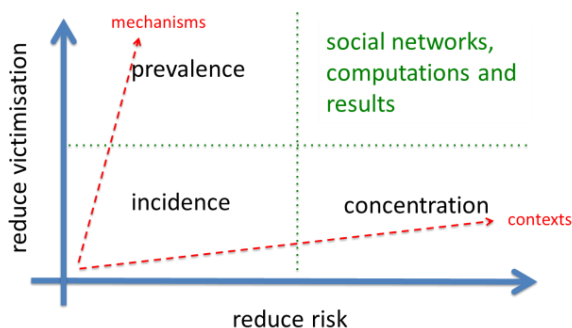

Figure 1. An incident picture and space for social computation

The goal is to develop solutions that have the ability: (i) to identify the mechanisms for governance and regulation that limit the effectiveness of current information-handling capabilities; and (ii) to develop new techniques and tools that will better match these capabilities to the needs of problems. More specifically, to provide perspective for long-term research that will deliver practical outcomes; initiate a change in thinking and methods of working amongst policing and criminal justice colleagues; and be utilised as a basis for evaluating relevant knowledge from existing fields.

2 Discussion
According to Farrell and Pease 'the most common mistake made by those using crime statistics is to look at incidence on its own, and to take it as the measure of the crime problem' (Farrell and Pease, 1993: 11). In fact, the number of crimes committed in a given area cannot explain the number of unique victims in that area experiencing crime,

and a very different view emerges when the number of crimes per victim is considered, that is, repeated occurrences of the same crime against the same household or individual.

It is essential, then, to determine whether crime levels and crime changes are the result of crime prevalence or concentration or a mixture of both. For example, analysis of prevalence in isolation from other crimes can underestimate real levels, while analysis of incidence and prevalence missing concentration ignores repeat victimisation issues.

2.1   Prevalence

A great deal is known about the most important risk factors for offending. These include things such as impulsiveness, poor parental supervision, peers who offend, school factors, living in a high-crime neighbourhood, and poverty. While it is relatively easy to identify risk factors for offending, it is more difficult to determine which risk factors might be causes of offending. In order to establish causes, it is important to measure a range of possible explanatory variables in order to test the hypothesis that risk factor X only predicts offending because it is confounded with some other causal factor Y. For example, are poor parental supervision and child offending associated only because antisocial parents tend to have antisocial children and also tend to be poor supervisors of children? (Bowers et al., 2011; Braga and Weisburd, 2012.)

Thus, standards of prevalence should pay attention to the need for different types and qualities of knowledge when addressing a diverse range of policy or practice questions. Developing standards of prevalence that respond to such concerns is not likely to be straightforward and matrices of prevalence may offer a potentially helpful way forward. However, for any question, there will be conflicting views about the merits of different forms of prevalence. Overall, there is a need to debate standards in order to develop understanding of different viewpoints. One size, it is suspected, will not fit all. However, the digital nature of computations means that it can be possible to capture the exact sequence of steps performed during simulation or analysis which has motivated growing interest in methods for recording the provenance of results in this area (Povey, 2000).

2.2   Incidence

The reformulated Peelian Principles as outlined in the recent report by the Independent Police Commission offer a glimpse of what many envisage the police are for, to contribute 'to the creation of a safer, more cohesive and more just society' (Stevens, 2013: 13. More specifically, 'to carry our tasks in ways that contribute to social cohesion and solidarity' (Ibid.:13) insofar as the public can help manage the demand as much as the wider police mandate can help manage the regulation of social conflict and order. One of the central tenets of the commission's report is the notion of a social justice model of neighbourhood policing: direct community involvement and quality decision-making, where policing 'has to be distributed and delivered in ways that are substantively and procedurally fair*'* (Ibid.:55). The extent to which delivery of neighbourhood policing is distributed fairly, is the focus of attention here, and how this is linked to the drive for the newly formed College of Policing to provide a means by which everyone working within policing has a say in charting its future.

The characteristics that appear to be connected with making policing a more evidence-informed profession also hold true for the purpose of crime reduction, that is, growth in the art or technology of information processing; intellectual, open-minded and impartial capability (man, man-machine, machine(s)); and an approach to a theory of science. Progress for each area would need software and hardware components utilised through a network-based approach, which support direct engagement and dialogue. This distributed network (or data ecosystem) is where the mobilisation of social and machine knowledge extends far beyond the traditional communication activities, instead looking at how problems are effectively engaged and treated in practice through the link between normatively justifiable, viable policing, on the one hand, and stable, cohesive equitable communities on the other (O'Hara et al., 2014; O'Hara and Hutton, 1994).

2.3 Concentration

Police crime recording is governed by the Home Office Counting Rules (HOCR) and the National Crime Recording Standard (NCRS). These rules provide a national standard for the recording and classifying of notifiable offences by police forces in England and Wales. The HOCR have existed in one form or another since the 1920s. However, in 1998 there were significant changes which increased the coverage of offence counts to become more victim-based (the number of victims was counted rather than the number of offences). Research undertaken by Her Majesty's Inspectorate of Constabulary, however, showed that offences '(a) were wrongly classified, (b) inappropriately 'no-crimed' (c) numbers were incorrectly recorded (d) error rates ranged between 15% to 65%, and (e) crimes were improperly re-classified' (Povey, 2000: 13–15). The Inspection found that of the two models[2] used at the time officers tended to use an evidential approach, apply a 'beyond- reasonable-doubt' test to record a crime, and use a lower standard to classify a crime as detected or no-crimed. Essentially, this meant that recorded crime levels were reduced, the levels of no-crimes were increased (by implication further reducing the level of recorded crime), and detection rates increased.

Subsequent inspections and collaborations have taken place since with the purpose of ensuring greater consistency and taking a more victim-oriented approach to recording crime. There has been some success, but there is still cause for concern (Tarling and Morris, 2010).

I propose a neo prima facie model toward crime concentration that promotes a more victim-oriented approach to incident recording, where crowdsourcing of incidence and impact by the community itself provides a more nuanced and variegated picture, about where neighbourhood security is being harmed. This approach has potential to draw attention away from 'hot' to crime 'cold-spots', or where there is better resilience, allowing a greater degree of freedom for policing colleagues regarding resource allocation. Further, 'the need to manage demand on the police is critical and emphasis must be placed on finding solutions through partnership working' (Stevens, 2013: 49). The biggest, and as yet, untapped partnership is that with the public.

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[2] 1: Prima facie: details of alleged crimes taken at face value, and recorded without scrutiny. 2: Evidential: details of any incident be challenged and validated.

2.4   Community

Of course, it is difficult to determine what constitutes 'community advantage' given the concept of community is complex and multifaceted and means different things to researchers, policy makers, service providers and citizens. Not all communities are the same, not all communities require the same resources and using the same strategy in all communities is highly likely to have negative consequences.

There is little doubt that research happens within communities, and the formation and operation of communities can be empowered by technology. Bill Wulf introduced the collaboratory: 'a centre without walls, in which researchers can perform their work without regard to geographical location, interacting, accessing and sharing data and computational resources' (Wulf, 1999: vii). Further, Foster et al. stated:

> *the sharing that we are concerned with is direct access to data and other resources, as is required by a range of collaborative problem-solving and resource brokering strategies. This sharing is, necessarily, highly controlled, with resource providers and consumers defining clearly and carefully just what is shared, who is allowed to share, and the conditions under which sharing occurs.*
> (Foster et al., 2001: 2)

These two portrayals capture important elements of the technology required to enable collaboration with distributed communities e.g. the need for shared infrastructure, on-demand access, and mechanisms for regulating community membership and/or privilege.

However, challenges remain. For example, the mechanisms that work for ten or twenty participants may not so easily scale to ten or twenty thousand, or more primarily because such things as trust, privacy, shared vocabulary or knowledge may break down as communities extend beyond simple personal connections (O'Hara and Hutton, 1994). One of the solutions to scaling problems is to build infrastructures that give users the ability to associate arbitrary metadata with data and/or services –an example of this is the online encyclopedia Wikipedia which anyone can edit. Notwithstanding issues of trustworthiness, this allows users to make their own decisions regarding provenance, accuracy, or quality.

3   Challenges and next steps

Technology will enable exploration of this space. In particular, it is likely that 'smart' technologies will allow large-scale interventions in the management of crime, via large-scale input from communities which are becoming highly literate in social networking and other information sharing practices.

Technology will allow groups to exploit the affordances of scale in terms both of the amount of computing power available, and of the increasingly widespread use of Internet-enabled devices across the population. This blurring of the boundaries between people and digital devices allows us to conceptualise distributed networks as 'social machines' which may solve problems in highly original ways and create new incentives

to get more people to cooperate to manage social issues such as crime. At a minimum, such social machines could be the basis for supply of very large quantities of data about local communities where crime is prevalent; data shared in such communities would be public, which would deflect criticism of 'police surveillance' and cleave more closely to the Peelian Principles. For example, one could imagine a data ecosystem that would encourage crowdsourcing of information to help improve the experience of victims or witnesses; this could be seen as the creation or foundation of a social machine.

It is necessary, therefore, to understand the implications of social machines to address and manage crime democratically as part of a full repertoire of crime reduction tactics. The test is moving simply beyond 'what works' to consider 'what works best in particular contexts' (Tarling and Morris, 2010).

4   Conclusions

Any possibility of improving the effective coordination of community problem solvers for community advantage needs to be better understood, that is, the science and practice of problem analysis and solutions. All else are dependent for their development and use upon this resource.

Success will depend upon a deeper understanding of both the technological and sociological issues, insofar as how justice is done – for the victim, the person who offends and location, as well as understanding large-scale prevalence, incidence and concentration phenomena. The reduction of these phenomena to network desiderata may risk losing the essence of that which it seeks to provide or achieve in preventative terms and having the unintended consequence of implementing a machine or series of social computations[3] that actually accentuates rather than mitigates the risk, threat or harm.

A carefully considered debate of the ramifications of the technology attempting to solve problems of 'social constraint' needs to be understood in much more depth. Suffice it to say a more scholarly presentation from future work can be looked forward to.

Annex: Re-imagining penal policy

This paper is a plea to researchers' to turn serious attention toward the possibility of evolving a dynamic discipline that can treat the crime problem in a total sense. This discipline should aim at producing a continuous cycle of improvements through increased understanding of the problem and improved means for developing new tools and techniques that can serve the world's problem-solvers. Ultimately, to develop a discipline aimed at understanding and harnessing 'social machine power'.

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[3] The social computer is a future computational system that harnesses the innate problem solving, action and information gathering powers of humans and environments in which they live in order to tackle large scale social problems that are beyond our current capabilities.

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About the author
Alistair Sackley is Strategy Manager at Hampshire County Council.

Correspondence: alistair.sackley@hants.gov.uk

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