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Techno-surveillance of the roads: high impact and low interest

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ABSTRACT:

Road crashes and road crime are huge international problems produced by global society's increasing dependence on motorised transport. To help reduce these crash and crime statistics, roads technology is rapidly developing to prevent the former and deter the latter. This technology largely works by vehicle surveillance, and as with surveillance technology used in other arenas of crime prevention, drawbacks and dangers go along with the safety and security enhancing aspects.

This paper reviews some key emerging roads technologies, the theoretical concerns raised by them and how, through various theoretical frameworks, they could be explored by the discipline of criminology. It urges that the surveillance aspects of road crime prevention and the study of vehicle-related crime more generally would benefit from criminological consideration and be theoretically rewarding. Moreover, in view of the centrality of the roads in contemporary life and the extent of global harm caused there, it contends that criminology should engage with this terrain.

Keywords: Roads technology Vehicle-related crime Crime Prevention
Surveillance

INTRODUCTION:

The locus for much crime concern to date has been on urban streets (pavements and pedestrianised areas), shopping malls, domestic dwellings, business premises, and the ether, where electronic crime is transacted. Little attention has been paid to criminal activities and their prevention that unfold in the largest public space used most commonly by most people – the roads – either as vehicle drivers, passengers, pedestrians or cyclists. This is all the more surprising in view of the huge numbers of killed and seriously injured casualties that occur on the roads,ⁱ often as a consequence of criminal actions.ⁱⁱ

Admittedly, the general myopia shown to matters of the road is not complete, and there has been considerable previous and current attention given to the prevention of autotheft (e.g. Maxfield and Clarke, 2004; Webb, 2005), and some limited interest in the surveillance technologies of CCTV (closed-circuit television) and ANPR (automatic number plate recognition) on the roads (Lyon, 2001, 2003; Norris, 2003, 2006). Yet given the burgeoning focus on surveillance and security in contemporary society, it seems odd that surveillance of the roads has not been placed more centrally under the criminological microscope.ⁱⁱⁱ

With this in mind it will be contended that the concerns around contemporary surveillance apply just as much to roads as to other public spaces, given that in the UK fully licensed drivers and the small proportion who illegally take to the roads as drivers comprise almost three-quarters of the adult population – about 35 million people^{iv} – and that around three-quarters of British households have access to at least one car ((DfT, 2006a: 8). So ultimately the bulk of motorised adults and their vehicles could be in this surveilled category.

This paper will first consider some of the theoretical concepts and concerns that characterise surveillance of the roads as much as they apply elsewhere, and then give

key examples of these new technologies with an outline of their benefits and dangers and their links with conceptual issues. While the paper focuses on the Britain terrain, as a world leader in CCTV deployment, unease expressed in Britain will find resonance elsewhere. Next, some speculation unfolds on the roots of criminology's blind spot for most things connected with 'vehicle-related crime', and why this may be a short-sighted policy. Ways in which criminology can rise to the challenge offered by vehicle-related crime within the discipline's parameters are discussed. Finally, it returns to the main theme that techno-surveillance of the roads raises some crucial theoretical issues in regard to privacy safeguards, leakage of and unauthorised access to data, and it is contended that criminology is well placed to deal with these and should engage with them.

THEORETICAL CONCERNS OF ROADS SURVEILLANCE

Surveillance of the roads provides a vivid and clear example of what is termed 'pre-crime' activity, as outlined by Zedner (2007). This illustrates how in the recent past the temporal focus in criminology has moved from post-crime due process procedures comprising the pursuance, prosecution and punishment of offenders to pre-crime security measures to prevent and pre-empt crime before it happens. This has come about as part of the cultural shift towards the logic of actuarialism aimed at defining, classifying and managing risk and risky populations (e.g. Feeley and Simon, 1994), and as Zedner notes, at still earlier interventions to reduce crime opportunities (Zedner, *op. cit.*: 265). Security of the roads is not referred to specifically as a site for pre-crime's gaze by Zedner, yet certainly many road technologies mentioned below are geared to prevent the occurrence of crime.

Zedner also points to the challenge of security to establish 'the values, principles and human rights that are to be defined in its pursuit' (*ibid.*: p 275). Privacy concerns are a key human rights issue connecting with road surveillance technologies, and they are often implicit in the drawbacks that accompany surveillance technology, providing a contrast to the oft-articulated benefits. These are the 'two faces' discussed by Lyon (2001: 61) whereby the upsides are marketed to consumers but the downsides are mainly kept from view.

Thus on the plus side, CCTV and video surveillance help city councils to ‘create safe, secure and attractive places for consumption, entertainment and tourism’ (ibid), which outcomes are achieved partly because cameras encourage citizens to act in their own governance to avoid attracting negative attention, reminiscent of Foucault’s observations, or as Norris and McCahill put it (2006: 114), CCTV is disciplinary in that it fosters ‘habituated anticipatory conformity’.

These purposes of technology are also relevant to the roads, where speed and red light cameras arguably achieve these objectives well. They encourage the vast bulk of drivers to police themselves and comply at camera sites and traffic lights, and they trigger the photo mechanism only when drivers commit traffic offences. Benefits include a reduced crash risk at lower speeds (e.g. Taylor et al, 2000) and hopefully a reduced fear of crash involvement, fear of crime and actual crime for all foot and road traffic alike.

This is how and why surveillance is sold to consumers by governments and commercial organisations as ‘benign’ and in society’s best interests. And it is why, as Lyon (2001: 135-6) among others notes, that there is a lack of resistance to, and largely complacent acceptance of, surveillance systems by society in general - although some speeders caught by automated cameras might be excluded from this assessment!

Indeed, Lyon notes that people have to be convinced about ‘the more worrisome and unsocial aspects’ associated with surveillance (ibid: 136), that as well as privacy concerns include ‘leakage of data’ issues that in many contemporary settings unfold against the backcloth of the blurring of public and private in the governance of society (ibid: 45). This trend for more public-private partnerships, with commercial enterprise taking over former state tasks of regulation, security and policing, is well in evidence in roads technology. So questions about present and future ownership of digitized images and the further purposes to which such data might be put are matters of concern here too.

It is not of course just privatised ownership of data that raises anxiety. ‘Expandable mutability’ (Norris and Armstrong, (1999: 58) or ‘function creep’ (Wood et al, 2006:

9; McCahill, 2007: 15), are concepts meaning that technology designed for one purpose can take on other functions, and data collected for one purpose can migrate for use in other ways that have the potential to be deployed in broader and broader contexts. So in regard to the roads, personal details of drivers and vehicles could be of particular interest to motor manufacturers, for example, eager to target potential consumers for a new model. Indeed, Bennett et al (2003) wryly note that these days 'you are what you drive', and commercial enterprise is doubtless hungry for the kind of personal data profiling beneficial to its sales campaigns.

Another theoretical concept germane to this discussion is that of social sorting (Lyon, 2003; Norris, 2003) whereby individual data from techno-surveillance is used in the aggregate to define 'target markets' and 'risky populations' which can have far reaching impact on life chances, and of social exclusion and discrimination (Wood et al, op cit: 7-9). In the context of the roads, drivers and passengers of particular vehicles could be sorted into the risk categories of those 'of current interest to the police' and those 'not yet of any police interest but could be in future' through the use of databases linked with ANPR technology, thereby exponentially widening the potential net of suspicion. 'Racial profiling' of owners or drivers of vehicles could conceivably be used to categorise those surveyed by such technology.

The following examples of contemporary and planned road technologies neatly illustrate the theoretical concerns mentioned.

ENFORCEMENT TECHNOLOGIES

As an advance on the Gatso speed camera that takes rear-facing photographs of speeding vehicles, new-style Truvelo cameras are permitted to take front-facing photos, which has the likely benefit of cutting numbers who will try to pass on the penalty points to another driver to lower their own disqualification risk. Once all driving licences held in the UK include a photo of the holder by 2012, comparisons will apparently then be possible between Truvelo images and licence photos where the registered keeper says he or she was not driving when committing the transgression. On the upside this could signal a reduced latitude to escape prosecution and a further deterrent against speeding, yet there are erosion of privacy issues.

Now that cameras are permitted to reach into the ‘private’ interior space of vehicles to photograph the driver as a safeguard against penalty point fraud, is there any bar to them searching for other transgressions – the ‘expandable mutability’ theme mentioned above? The former Secretary of State for Transport, Alistair Darling, denied in 2005 that speed camera technology would be used to identify those using mobile phones while driving or those failing to use a seatbelt (e.g. *BBC News*, 2006), but in 2006 there were renewed calls for such deployment on the grounds that solid research findings show these offences are linked with a higher risk of causing serious and fatal crashes (e.g. *ROSPA*, 2002). Since then the head of the Roads Policing Committee of the ACPO (Association of Chief Police Officers) has hinted that the policy could change (*Daily Mail*, 2007), so will this further incursion be allowed on the grounds of the public good?

ANPR’s first main use was in the City of London for counter terrorism operations in the early 1990s (Gaventa, 2005: 40) but following large scale police development projects in recent years (ibid), this technology is being rolled out in Britain with help of £35m government development funding in 2006. ANPR works by scanning passing vehicle registration plates and checking them against various relevant databases. It can be deployed by intercept teams who wait for automated alerts that the approaching vehicle or its likely driver will be of interest to police, which vehicle is then obliged to stop one way or another; or it can be used by ANPR-equipped police patrols keen to speak to a driver about some document irregularity, or to a person who is known to drive a particular vehicle about a related or unrelated enquiry; or it can be used on overhead highway gantries to log sightings of particular vehicles for possible follow-up. CCTV-linked ANPR systems tend to be used in town centre environments for remote viewing with alerts sent to intercept teams (Gaventa, 2005: 40).

Now that many relevant regulatory and enforcement databases are linked and digitised, registered keepers and drivers can be subject to swift digital checking and disciplinary intervention in the form of fixed penalties, arrest and prosecution. To borrow from Norris (2003: 270), this has ‘exponentially increase[d] technology’s panoptic power....through being able to link a vehicle, and by association its occupants, to a database of named individuals,’ removing subjects’ anonymity (ibid).

This of course is a key difference between the surveillance of foot-traffic by CCTV that normally leaves those observed by CCTV anonymous in contrast of that of road-traffic subjects.

Research reports conclude that ANPR is proving to be an effective risk management strategy of denying criminals use of the roads (Metropolitan Police Authority, 2005). This is largely because ANPR can tell almost instantly when a passing vehicle is of interest in some way. This may lead to an intercept team stopping the vehicle identified so the guesswork is taken out of checking suspect vehicles, with reports of nine times higher arrests arising from this technology than from more traditional means (PA Consulting, 2004: 1). ANPR is also used as a key tool in armed operations and many serious non-motoring crime operations, and it is being rapidly incorporated into mainstream policing via the National Intelligence Model.

A benefit of this technology is that discretion is very largely removed from police stops, removing at the same time any potential discrimination in targeting certain individuals seen as high risk - as is often claimed for street stop and searches (e.g. Waddington, Stenson and Don, 2004). However, where high volume crime areas have been selected for ANPR operations - as might be expected from deployment of an intelligence-led approach, this raises the likelihood that pre-emptive social sorting will occur where particular high risk groups will be over-represented among those detected for motoring or mainstream crime, as happened in a recent ANPR initiative (MPS/TfL, 2006). Sensitivity to areas targeted for operations thus seems essential in order for ANPR operations to be acceptable to local communities and perceived as fair.

These illustrations show that once a breach is committed on the roads it seems that detection is becoming more certain, more swift and more invasive among present and past transgressors, i.e. those of police interest. Yet among drivers who are *not* breaching a traffic law when observed or measured and who are not hitherto of interest to the authorities in any related way, privacy loss through developing technology is also proceeding apace. The justifiability of such attrition is perhaps more questionable especially in regard to ANPR technology.

ACPO's ANPR Strategy for the Police Service 2005-08 anticipated 50 million daily number plate 'reads' by 2008 in Britain (ACPO, 2005: 8), with data being retained at the National ANPR Data Centre. This is where all agencies will read in their data, which ultimately could be shared among the partner agencies and fed back to relevant individual agencies. Crucially these sightings, linking vehicle registration plates with the locations where and when observed, can be stored for two years with the potential capacity for five years' retention (ibid: 14). With a national network of thousands of closed-circuit ANPR cameras planned on many types of roads and garage forecourts (ibid: 17), linked to a growing number of databases, police in future will be able to check for drivers and vehicles of interest to police retrospectively (see McCahill, 1998: 44).

Thus the journeys of drivers 'not yet of any police interest' could be revisited by police for a considerable length of time afterwards, and this technology has the capacity to 'revolutionise arrest, intelligence and crime investigation opportunities on a national basis' (ACPO, op. cit: 18). This is great news for the purposes of intelligence-led policing and for enhancing safety and security, and a good example of pre-crime strategy. It could also be good news for those needing genuine alibis and bad news for those wishing to avoid incrimination, but already the technology represents a huge incursion into the privacy of law-keepers and law-breakers alike. Moreover, the sharing of intelligence information between agencies could well be liable to unauthorised 'leakage', as has occurred in similar contexts discussed below, rendering the potential abuse of data sharing as a live and serious concern.

As might be anticipated, ANPR technology has not escaped the attention of the Chief Surveillance Commissioner who has opined that any covert surveillance by ANPR might be challenged in court under human rights or privacy law, unless enabling legislation is introduced to ensure the compliance of ANPR gathered data with such laws (Office of Surveillance Commissioners, 2006: 14.2-14.4). It might be considered that such human rights concerns also apply wherever vehicle occupants or drivers remain unaware of the possibility that camera images from other technology might be recorded and stored of them for later use, especially when a vehicle, its keeper or driver is 'not yet of police interest'. Clearly, more will be heard of this matter in future, though criminologists have not been overly vocal on this to date.

It is not only digitized ANPR images that may be of concern. Vehicle keepers' personal details including their registered address held by the government's driver and vehicle licensing agency, the DVLA, may be requested by third parties having 'reasonable cause', under Regulation 27 of the Road Vehicles (Registration and Licensing) Regulations 2002 (DVLA, 2007). Following media stories about the 'use' of this provision, such as supermarket chains wishing to enforce fine notices incurred through customers overstaying in their car parks (e.g. *Sunday Times*, 2006a,b), a public consultation was set up by the Department for Transport in 2006. A raft of new measures on access to the UK vehicle registers was announced shortly thereafter (Government News Network, 2006). However, since then more dubious purposes for such released data have been alleged with further investigations by the Information Commissioner's Office promised (*Mail on Sunday*, 2007: 1).

Whatever the outcome, Lyon's 'leaky containers' (2001) are well in evidence here, with the sale of such personal information held by a government agency seemingly not prevented to date by S.55 of the Data Protection Act 1998. It is also another contemporary example of 'function creep', as data gathered for one purpose then migrate to another, and transparency of the dataflow and destinations appears compromised and deserves elucidation.

Vehicle keeper details have already been subject to unauthorised disclosure through corrupt police practices uncovered by the Information Commissioner's Office (2006: 15-16) whereby among many kinds of data 'sold on' to unauthorised customers, were DVLA vehicle owners' records. So data abuse in this context has already occurred, which is clearly a matter of serious concern.

Another potential example of function creep could occur if planned road enforcement technologies were developed further. 'Smart' driving licences are likely to be used routinely in future to ensure that only drivers authorised to drive a particular vehicle in fact do so. This could largely eliminate unlicensed driving, and would provide some peace of mind to owners keen to prevent theft of their vehicles. A similar 'alcolock' system is provided for under the 2006 Road Safety Act, that will require previously disqualified drink-drivers to give a breath sample into an in-vehicle

instrument to check their breath-alcohol levels, which will prevent those ‘over the limit’ from starting the ignition.

Big safety and security benefits for the ordinary road user will accrue from these technologies, yet for drivers and vehicle keepers one wonders how far such preventative strategies could extend? One might speculate that in the future, starting your engine could be linked in with non-payment of privatised utility bills, council tax, income tax, unauthorised bank overdrafts to name a few. This would be ‘expandable mutability’ or ‘function creep’ writ large.

ROAD USE REGULATION

The restricted privacy that drivers have is dwindling not only in respect of traffic law enforcement but also in regard to road use regulation. The prime example of this is where entry into a congestion charge zone logs a vehicle somewhere within that area until its exit whichever form of payment is used. Thus the anonymity of vehicles as to their general whereabouts is lost although drivers may retain their privacy – since the use of debit or credit cards does not necessarily identify drivers of vehicles.

A ramification of congestion charging technology again illustrates the concept of ‘function creep’ whereby Transport for London, the capital’s transport authority, has been exempted by the British Home Secretary from selected Data Protection Act 1998 provisions. This will allow bulk data from its ANPR cameras used to log vehicles for congestion charge purposes to be viewed in ‘real-time’ by anti-terrorist officers of the Metropolitan Police for intelligence purposes (*BBC News*, 2007). This is also a good example of pre-crime activity by the state’s agencies.

The technology that would be used for the proposed introduction of a road pricing system to Britain is currently being explored (DfT, 2007a). However, it is likely that such a scheme would use GPS (global positioning system) co-ordinates with in-vehicle electronic tagging to record and charge vehicles as they pass beacons sited along the charged roads. While ‘privacy safeguards must be ensured’, according to the DfT (ibid), it is quite possible that unauthorised data leakage could occur or data might even be ‘sold on’ legitimately as noted above in regard to congestion charge data, should circumstances change. If such a scheme were rolled out widely, a key

issue would be the extent of public confidence in the privacy safeguards, and the ease of opting out of using the charged roads by travelling on alternative and convenient routes should drivers unsurprisingly have concerns in this regard.

IN-VEHICLE TECHNOLOGY TO ASSIST DRIVERS

Intelligent Speed Adaptation will use satellite technology to restrict vehicles' speed to the permitted maximum along the highway by linking an in-vehicle ISA device to sensors at the roadside. Currently, this technology has been trialled, evaluated and is ready to be rolled out, with pilot participant drivers generally in favour (Carsten and Compte, 2001) It is likely that when ISA technology is introduced in vehicles commercially, its use will at first be voluntary to assist those who will choose always to keep within posted speed limits. Research shows that the bulk of Europeans would like to have access to an in-vehicle speed limiter (Goldenbeld, 1997), and if ISA usage ever became mandatory 'speeding' would cease to happen, which would represent a huge road safety benefit and is the reason for its development.

The compulsory use of such technology is unlikely for some while yet, but in the surveillance context this technology would provide another means to link driver and vehicle details to place and time. The main issue could again be the adequacy of privacy safeguards in the context of the blurring of public and private enterprise since the technology is being developed commercially.

Another choice taken up increasingly by drivers is to subscribe to companies offering satellite navigation systems to aid real-time journey planning in given traffic circumstances through use of GPS technology. This effectively locates vehicles in time and space when the device is switched on. While on the one hand, subscribers may trust the companies with knowing their movements 'in a way that they don't trust governments' as opined by Alistair Darling, the former Minister of Transport (*The Times*, 2005), this is another technology that could depend on the adequacy of privacy safeguards to protect against information leakage at a later stage for intelligence or commercial reasons.

Under EU regulations there is a 2009 deadline by which time so-called 'black boxes' - or eCall - should be mandatorily fitted to all new cars sold in EU countries, with

which Britain is likely to comply. The purpose of these boxes is to deploy the emergency services to the scene in the event of a road crash by providing details of the vehicle, owner, location and crash severity to reduce response times, and to do this automatically if vehicle occupants are unable to do this. Clearly this technology could provide a valuable service that will save lives and reduce delays caused by road congestion at the scene, but again fears of a 'spy in the car' are raised that the information could be used for other tracking purposes or 'sold on' for commercial purposes.

THE SUR VEILLANCE BALANCE

The swift emergence in the new millennium of the future-oriented and pre-emptive risk-management approach that has been adopted by Britain, the United States and other developing countries in regard to the surveillance of the roads and other public spaces, strongly suggests there will be no going back. In the post 9/11 era with security threats routine in many countries, drivers may reluctantly have to accept that surveillance of transgressors as well as of present and future 'innocents' will continue. In other words, pre-crime activity on the roads has come to stay.

Arguably, this is defensible provided that the collected data are used strictly for state security purposes, crime prevention and crime detection. Certainly, roads surveillance technology bestows added security and safety to the travelling public through promoting deterrence and encouraging compliance of potential offenders, and when this fails, through sanctioning actual offenders in the hope of future individual deterrence. Knock-on effects of greater compliance include reduced road casualties, enhanced quality of life feelings and lower fear of road crime, which are good for all citizens.

Yet justifiable fears remain that the personal data gathered might be hived off for less honourable purposes – by commercial concerns for marketing purposes in which case irritating infringements of privacy could occur, but more worryingly the onward sale of data could be used by private investigators or by organised crime gangs or those deemed to be state security risks if these ended up at unforeseen destinations, as commonly happens with military weapons. As noted, some unauthorised disclosures have already occurred. Indeed, human rights abuse through the leakage of driver and

vehicle data aided by the blurring of public and private collaboration could lead to unintended and potentially dangerous outcomes. Thus adequacy of privacy safeguards will be crucial. Another issue will be how much latitude vehicle keepers and drivers have to opt out of using the various vehicle locator technologies. Achieving an acceptable balance between these competing tensions needs considerable effort through proper and urgent democratic debate, before – as seems increasingly threatened – ‘game over’ is called.

It is ironic that while in Britain police, the state and public-private collaborations are increasing their focus on drivers, vehicle-related crime and roads policing, other than a few notable exceptions there is no clamour by criminologists to consider these topics even with the added potent ingredient of surveillance thrown into the mix.^v The final section will speculate briefly on reasons for this myopia, and how criminology can take forward the challenges offered by vehicle-related crime, before concluding on the issues highlighted by roads surveillance technology.

CRIMINOLOGICAL MYOPIA FOR VEHICLE-RELATED TOPICS

Speculations to explain the eschewal of vehicle-related crime as a key area of criminological study include the following:

The first is the stereotypical image conjured up by ‘car crime’, which is as crime to vehicles - the volume crime categories of ‘theft or and from vehicles’ - rather than crime by drivers or that involving wider society - such as businesses and corporations. As things stand, vehicle-related theft offences in Britain tend to be historically and ideologically associated with the administrative criminology of the Home Office and subject to control by situational prevention techniques. These may not provide much excitement for critical and cultural criminologists despite such techniques comprising a key risk management strategy that is proving effective (e.g. Clarke, 2005).

Secondly, road traffic crime is not considered to be ‘real crime’ in the sense that burglary or robbery are (Corbett and Simon 1992: 37-42), and the public perceive there are generally less serious consequences for motorists who kill and injure than for people who kill and injure in other circumstances (e.g. Hood 1972: 99-101; DoT and Home Office 1988: 20). This perception probably arises because harmful

consequences from driving are rarely intended or sought and no mental fault element (mens rea) need be proved - only that under strict liability rules the unlawful behaviour happened.^{vi}

Lastly, the conclusion drawn by the Commission for Global Road Safety (2006) is that traffic deaths, injuries and associated crimes are tacitly accepted and largely ignored on a global scale because they are seen as collateral damage of the striving of developing countries to promote economic growth. In this view the harm caused is seen merely as the unfortunate by-product of car culture and society's demand for increasing mobility. Is it possible that such complacency extends to the discipline of criminology? This would be a narrow view, and the following paragraphs indicate why this would be so. They also illustrate the ways in which criminology can usefully develop the study of vehicle-related and roads crime given the parameters of the discipline.

THE UNWARRANTED MARGINALISATION OF VEHICLE-RELATED CRIME

Firstly, road deaths have become the biggest killer of 10-24 year olds worldwide with up to 1000 children killed daily on the roads (WHO, 2007), and they are estimated to become the world's third biggest killer overall by 2020 (Jacobs and Aeron-Thomas, 2000). Even if some of these are 'accidents' insofar as they are unintended, unforeseeable and occurring entirely lawfully, many other 'accidents' *are* deemed unlawful as noted earlier, and these should be of considerable crime prevention concern.

Moreover, more than four times as many people were killed on British roads in 2004 as were recorded as homicide victims.^{vii} Since excess speed is attributed as a contributory factor in around a third of fatal collisions (e.g. Mosedale and Purdy, 2004), this implies that more are killed with excess speed involved than become homicide victims, hardly justifying the continued marginalisation of drivers' unlawful actions such as speeding. Attention is therefore needed to the powerful, prevailing and conventional definitions of crime victimisation and offending and how these mainstream definitions do an injustice to the huge volume of road crime victims. Mirroring Tombs' (2007: 546) suggestion in regard to unacknowledged occupational injuries and their link to work-related safety crimes, local and national offending and

victimisation surveys could be adapted to survey the nature and extent of respondents' road crash involvement as drivers and passengers. 'Road rage' incidents that affect a broad constituency as victims and offenders (e.g. Mizell, 1997) deserve mapping, as does the growing problem of 'hit and run' crashes (DfT, 2007b: 80).

Secondly, anti-social behaviour on the roads is a big community concern. Wood (2004:11) showed that 43% of the population regarded speeding traffic as a 'fairly' or 'very big problem' in their local area, and this was the most commonly mentioned community concern about anti-social behaviour. Congruent with this is the oft-heard public request for more motorised police patrols to promote public reassurance, underlining how roads suffer anti-social behaviour from which people wish to be protected. Arguably, the contemporary focus on reassurance policing should be broadened to incorporate the study of roads policing, and how its objectives to deny criminals the use of the road and reduce anti-social behaviour on the roads (ACPO/DfT/Home Office, 2005: 1-2) may contribute to improving quality of life and lowering fear of crime. Somehow, the development of roads policing as a worthy subject of study in its own right has been overlooked by policing scholars, and given the transnational surveillance aspects of road crime, this warrants urgent remediation.

Thirdly, recent research has uncovered much overlap between minor and major traffic offending, and offending on the road and mainstream crime. So for example, Rose (2000) found that convicted drink-drivers were twice as likely, and disqualified or dangerous drivers four times as likely as the general population to have a criminal record for mainstream offending. (See also Broughton, 2006.) Extending this kind of criminal careers research through ethnographic exploration of various 'invisible' groups of drivers that drive unlicensed and unknown to the authorities or work in criminal gangs and networks would throw light on this dark corner of the political economy.

Fourthly, roads policing as a collection of risk management strategies deserves more interest by the discipline. Gaventa (2005) has conducted an excellent review of how roads policing is evolving through the mushrooming use of surveillance technology, which report lays out the groundwork of how risks and risky groups are managed, targeted, regulated and controlled on the roads in accord with pre-crime strategy.

This reinforces support for the development of roads policing as a topic for criminological study in its own right.

Fifthly, critical criminology's focus on the 'invisible' crimes, transgressions and irregularities of powerful elites and organisations would find much of interest in activities connected with road transport and traffic safety. The actions and lack of action of motor manufacturing corporations, road haulage organisations, lobby groups and employers with a motorised workforce in regard to road safety issues and the state's response to such developments, offer rich fodder to those interested in government and criminological constructions of crime, and how these exclude safety crimes linked with the roads (see Tombs, *op. cit.*). Yet there has been little interest in this area (though see Corbett, 2003: 177-189).

Sixthly, cultural criminology's concerns with crime construction (e.g. Ferrell, 2005) can find much for qualitative study of the roads, such as everyday media images of road 'accidents' that brutally end the lives of some while causing mild inconvenience for others, and the less frequent but sensational images of the car crash as the 'archetypal means of celebrity death' (Brottman, 2002: xv). The meanings of everyday unlawful driving behaviour for members of different sub-cultures could be illuminating, such as 'ladettes' driving behaviours compared with the 'lads', those of different religious faiths (e.g. Husain, 2007: 198-199), and of youth subcultures generally. Ferrell's discussion of 'edgework experiences' (*op. cit.*: 143) where the 'counter-cultural values of the subcultural are confirmed at the level of existential experience' and where 'the value of [their] illicit skills are measured, and proven, against the risk of violent failure', could find resonance among 'top ender' high-speeding motorcyclists and drivers.

Lastly, techno-surveillance of the roads can encourage driver compliance with traffic laws, though of equal concern is its potential to criminalise almost all drivers – given that few ever keep to all traffic laws all the time, and that the 'rolling out of the state' continues through the still burgeoning network of CCTV cameras operated by local authorities, local crime and disorder reduction partnerships, local safety camera partnerships and by the police service. To illustrate, a large-scale survey found that almost one in six British drivers had penalty points on their driving licences in 2007

(Direct Line Insurance, 2007). Currently, this criminalisation discourse is largely left to the British tabloid press and lobby groups such as Safe Speed and the Association of British Drivers, where the 'victimisation' and 'oppression' of ordinary motorists by speed cameras is a topic of continuing coverage and occasional outrage (e.g. ABD, 2005). The present proliferation of websites on discontent with speed cameras and other matters of regulation on the roads indicate that this is an issue that criminologists might usefully - and arguably should - engage with now. What supposedly are 'minority grumbles' could signal imminent mass disaffection among the British driving public.

More profoundly, the Home Office's (2007) consultation on modernising police powers under the Police and Criminal Evidence Act 1984 resulted in calls from some respondents to extend the taking of biometric samples such as DNA and fingerprints from those committing non-recordable offences, which could include speeding (see Home Office, 2007 : 11-12). A public enquiry into the national DNA database was announced in response. Whatever developments ensue thereafter, the need for immediate democratic debate on what would become a fairly blatant means of social control of the masses is further underlined, as convictions for speed offences continue to grow year on year in Britain (see Home Office, 2006: Tables D and 2).

CONCLUSION

To conclude, the ever increasing volume of traffic on our global roads means that enforcement using techno-surveillance to balance out deployment of police or highway patrols looks like the most realistic means through which to provide adequate enforcement coverage in the future. This situation is likely to apply internationally, and the advantage is that further deployment of techno-surveillance mechanisms should promote better compliance with traffic laws that will lead to improved security and safety for all road users and fewer casualties and crimes.

Yet Britain's position as a world leader in CCTV deployment on and off the road means it is also well placed for critical analysis of the drawbacks and dangers of this and other surveillance technology. The accelerating speed at which the technology is being implemented and broadened underscores the urgency of such analysis and need for proper and comprehensive public debate.

Key issues in this context that also deserve theoretical input from criminologists internationally include the transparency of the flow of vehicle and vehicle occupant-related data to their destinations; the various ways that surveillance data can migrate for other purposes; and the adequacy of privacy safeguards to protect against unauthorised leakages and misuse, including the accountability mechanisms of those entrusted with data handling (Wood et al, 2006: 8-9). In Britain, the Information Commissioner's Office will doubtless continue to have a key role in highlighting such concerns, especially any suggesting human rights breaches. The volume and gravity of these could escalate as the mushrooming of surveillance networks and data-sharing agencies exponentially increases opportunities for misuse. Ultimately, pre-crime pre-emptive action to reduce collective local and national security and safety risks will need balancing against the resultant increased social control and social sorting of the masses and the privacy erosion these bring. The international community and nation states should not stand back as the potential for these risks grows.

Finally, it is not just the surveillance aspects of road crime prevention and autotheft prevention that deserve the criminological gaze. The study of vehicle-related crime in general by criminologists in Britain and elsewhere could be theoretically rewarding, as this paper indicates. It is also long overdue in view of the strong likelihood that the roads are the most commonly used major public space in contemporary society that continue to produce far too much crime, unnecessary deaths and injuries, motoring convictions and crashes among all motorised nations. Criminology could not resolve these problems on its own, but highlighting these concerns would crucially raise awareness and bring much needed attention to a neglected terrain.

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ⁱ Injuries and deaths do not occur evenly on different types of roads, e.g. in Britain, rural roads incur more casualties than motorways (DfT, 2006: Table 5c). However, for the purposes of this paper, the 'roads' will refer to any public highway used by motorised traffic.

ⁱⁱ Probably between a quarter and a half of all 'accidents' in England and Wales are unlawful, e.g- see Corbett, 2003: 135 extrapolating from Pearce et al, 2002: 25-6; Forsyth and Silcock, 1987).

ⁱⁱⁱ For example, see Criminal Justice Matters (2007) issue 68 on 'Security and Surveillance' where roads technology is referred to only fleetingly in a couple of articles.

^{iv} In mid-2005 there were 45.8 million adults aged 17+ in the UK (ONS, 2005: Table A1); 72% of the UK adult population hold full driving licences (Dept. for Transport, 2006, Table 2.3:11), and a small proportion of all *driving*, estimated at <1% (Knox et al, 2003: 48), is with an inappropriate or no licence.

^v The Jill Dando Institute in the UK is atypical in responding to the challenges of vehicle-related crime.

^{vi} One could counter, of course, that reckless or dangerous driving nevertheless raises the risk of harm occurring and harm can hardly be regarded as entirely unforeseen even if unintended.

^{vii} 3,508 were killed on the roads and 853 were homicide victims in 2004 - Compare Table 8.1 Transport Statistics GB (DfT 2004b) with Dodd et al (2004: 78).