

DINNER/DISCUSSION SUMMARY

How can science support the Home Office in reducing and detecting crime, improving security, controlling immigration and managing the prison service?

Held at The Royal Society on Wednesday 26th May, 2004

Sponsors:

**Engineering and Physical Sciences Research Council, Medical Research Council,
National Grid Transco Foundation and QinetiQ**

In the Chair: **The Rt Hon the Lord Jenkin of Roding**, Chairman, The Foundation for Science and Technology

Speakers: **John Gieve CB**, Permanent Secretary, Home Office
Paul Wiles, Chief Scientific Advisor, Home Office
Peter Neyroud QPM, Chief Constable, Thames Valley Police
Alasdair Rose MBE, Crime Detection & Prevention Technologies Programme Manager, EPSRC

JOHN GIEVE, said that on arrival at HO in 2001 he had found it employed some 2,000 scientists drawn not, as might have been expected, from the social but the physical sciences. The bulk of these were in the Forensic Science Service and the Police Scientific Development Board but also concerned with other HO responsibilities with scientific dimensions such as drug control and the licensing of animal experiments. The physical sciences were at the heart of anti-terrorist policing and immigration control. There was a need to strengthen the in-house skills and to harness science and the evidence base and make these the driver of policy and practice.

The aims of HO were to reduce levels of domestic and international crime, to improve the efficiency of the criminal justice system, to reduce recidivism and the harm caused by controlled drugs, to regulate entry and to support strong and active communities.

Effective enforcement needed to be boosted by improvements in the underlying cohesion of communities. Police teams were only one element in solutions. Reduction in the fear of crime required an increase in public confidence in the criminal justice system. There was still a perception gap. Changes in beliefs would lead to changes in behaviour, but co-operation from the public was necessary.

In the field of social sciences, studies were in hand regarding the allocation of funding in such fields as crime mapping, the psychology of restitutive justice, to find out what sanctions were most effective, and economic research relating to immigration movements. In the physical sciences, at the forefront was work on the National DNA database, work on explosives and on the effect of CS gas, development of equipment for the protection of the police and work on protection against Chemical, Biological, Radiological and Nuclear (CBRN) attacks. DNA had recently contributed to the solution of fifteen murders and 330 rapes and could now be obtained from finger-print residues. Number plate recognition was constantly improving. CCTV evidence of scenes of burglaries could be linked with a 40% reduction in the incidence of that offence. Electronic tagging offered fruitful ways forward. Much of the science in HO was in the field of product development rather than pure research. The need was to identify potential risks.

The three principal ways forward were: the development of centres in the social sciences and statistics, in the FSS and in the PSDB; the development of partnerships with the Research Councils, such as the advisory sub-group on CBRN and terrorist threats; and the development of an integrated science strategy for the whole HO group.

PROFESSOR WILES showed from 1960 the figures of recorded crime had a rapid increase until 1990 when the rate slowed down. This might in part be a correction for the previous increase but there were no other trends and similar falls had been observed in other countries such as in violence in the USA, possibly attributable to the passing of the crack epidemic and improvements in economic stability.

An analysis of offenders showed that it was possible to identify three main groups. Early onset offenders were those who began their criminal career early. The risk factors in relation to themselves or their families were high. Their criminal careers were protracted and they engaged in all types of crime. They accounted for some 40% of the total. The turnover of this group was some 30%. The second group comprised life-style offenders whose deviancy was related to social circumstances. Their careers began in adolescence and were of shorter duration, they showed bursts of persistence and accounted for the bulk of the rest of criminal activity. Finally, circumstantial offenders showed few specific factors. The differences between these categories presented problems in determining where resources could best be applied.

The scientific contribution to reducing offending embraced fingerprinting, DNA, automatic number-plate recognition etc., as aids to both detection and deterrence. These were important tools in relation to the group of persistent offenders. Only a minority were caught and effective enforcement depended on detection. Research and development programmes favoured early intervention, with management of high risk factors ranging from CCTV to protective equipment and the provision of non-breakable glasses in public houses.

In relation to victims, the risk of suffering a crime was reducing. The problem was how to convey this message to the public. The burglary distribution in Sheffield was used as an example. Whilst some houses were not attacked at all, others had been burgled several times. Offenders do not normally travel far.

For crimes such as burglary and car crime greater protection would be secured by better security and increased use of technology. Focussed observation and targeting of victim hotspots, using GIS analysis would reduce target attractiveness. The aim should be to design out crime.

The decline of community guardianship, with the reduction in the numbers, for example, of caretakers, park-keepers and conductors, resulted in public policing being over-extended. In its place there was a greater need for scanning for goods and weapons, the use of CCTV and the development of tracking technologies.

For the future, much depended on action by others outside HO. HO would need to be more porous, drawing, through Chief Scientific Advisors, on expertise across Whitehall to build up a new intelligence hub in HO evaluating risks and opportunities. The Police Science and Technology strategy would be to assess capabilities, focus on key developments, engage in a structured dialogue with other bodies and to evolve an overall strategy for HO.

PETER NEYROUD emphasised the importance of evidence, impartiality, observation and logic. New technologies were multiplying the problems of the police. The increase in the number of mobile phone calls and the expansion of the internet were accompanied by an increase in the number of offences against children - a quarter of a million images had been found on the computer of one paedophile offender - of offences of hacking, fraud and the dissemination of viruses.

Responding to the theft of high-performance cars there had been a shift from labour to capital intensive techniques depending on increased surveillance, identification technologies, including DNA, intervention and communication techniques and improvements in organisational and administrative information technology. Enhanced video identification techniques had been developed over the last ten years.

An important field had been the development of less lethal control equipment. Research had compared the effects of pepper and CS gas, and evaluated the effects of baton rounds, water cannon, tasers, malodorants, acoustic devices and the relative efficiency of nets, glue, foam and grease in relation to vehicle crime. A necessary consideration in all cases had been the question of political acceptability. The procedure in these evaluations, starting from a social science base, had been to conduct a survey of a wide range of police officers to identify gaps in existing weaponry and to assess the acceptability, in terms of biological and psychological impacts, of new developments, using models from medical and bio-ethics, then, following medical tests, to make a submission respecting acceptability to the Secretary of State. Around eight or nine people owed their lives today to these developments.

Intelligence products were now inter-related, particularly in the case of cross-boundary issues. The speaker illustrated this with the example of burglaries in Reading, work on the recovery of stolen vehicles and the use of a burglary hot-spot map for Slough which had enabled the volume of crime to be reduced where the previous occurrence had been most serious, albeit at the price of a subsequent wider geographical distribution.

ALASDAIR ROSE indicated that the EPSRC was concerned with longer-term scientific development over a period of five to ten years. The starting point was a review which had examined the opportunities for science and technology and had made the key recommendation that there should be a dedicated funding stream. In 2001 a budget had been allocated to attract and harness the skills of physical scientists and engineers to produce innovative technologies. They had been encouraged to 'think crime' and to envision technologies relating to personal property, identity and detection. The programme involved long-term pre-development research, the involvement of academic bodies and the involvement of users, both private and public. Calls had been made for proposals with an open remit. Of the proposals submitted about two dozen had been selected involving a budget of some £6m. Research networks had been supported in the fields of bio-metrics, identification, surveillance and crime-science. Specific instances were the use of MM wave imaging to detect concealed weapons, the use of novel light-weight materials to provide bomb protection and the development of super-resolution imaging using astronomical techniques for detecting atmospheric disturbances.

Future developments would be the allocation of additional funding of £6m, and the encouragement of fresh ideas through the use of brain-storming. Issues raised in this work were whether EPSRC

was the most appropriate co-ordinating body, whether encouragement needed to be given to science and, if so, how and by what measures success should be judged.

In discussion the following points were made:

- One contribution science might make to HO might be through modelling, but the scientific model could be tested; was it possible to test policy models against policy outcomes? Did public reaction have to be taken into account? Hitherto the use of models had been limited and improvement was needed. Models could be used to test the balance of investment. There was scope for modelling scenarios. Before the police had GIS a good model had been developed but it had remained in the police crime information system and had not been exploited.
- Computer modelling could now employ cognitive systems and fuzzy logic. Modern super-computing offered increasing scope. GIS predictors were taking advantage of these possibilities and collaboration with work undertaken by MOD was to be the subject of an imminent meeting.
- Emphasis was given to the need for development. Work perfected in the laboratory and drawing on the in-pur of different Research Councils, such as that in the field of human identification, needed to be taken forward to a point where it could be marketable. It was agreed that a development process, analogous to that in the field of weapons technology, was required. An illustration given was that of funding in the field of forensic pathology.
- A particular problem lay in the field of electronic crime, where there was a lack of research into techniques. Work needed to be done to make the criminal justice system compatible with the volume of digital evidence which was being generated. This was particularly relevant to the offence of hacking and the difficulty of legislating to regulate this activity satisfactorily.
- At the operational level, the question was raised whether the lessons of the NHS in relation to data-handling compatibility had been learnt, and would such problems be avoided in equipping individual police forces? It was recognised that there had been problems in the past. The independence of individual forces had to be acknowledged but there was increasing recognition of the importance of commonality and the mistakes of the past should be avoided in the future.
- The value of identity cards was questioned. Their function was to provide a quick and reliable method of determining identity. This would be important in fields such as security, immigration and the handling of questions of entitlement.
- The question was raised how the balance of funding was struck between preserving a safe, tolerant and just society and conducting the war against terrorism. The importance of maintaining such a balance was recognised and reference was made to the contribution government made to funding good race relations. Equivalent funding was needed for both objectives.
- The question of the protection of the individual in relation to the development of a National Database also raised issues of balance. Such data were retained only for good reason. The individual's right of access to such data was statutorily safeguarded. The importance of identity connected with such a database could not be underestimated. The surge in the technology connected with mobile phones illustrated the importance of enabling the police to catch up.

Sir Geoffrey de Deney

The presentations can be found on the Foundation's web site – www.foundation.org.uk.