

House of Commons Select Committee on Science and Technology Inquiry into "Scientific advice, risk and evidence: how government handles them" with particular reference to the technologies supporting the Government's proposals for identity cards.

Response to written submission by Dr John Daugman.

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Executive summary

1. In advance of appearing to present Oral Evidence to the House of Commons Science and Technology Select Committee, the LSE Identity Project was provided with all the written submissions made to the Committee regarding the Government's use of scientific advice for the Identity Cards Scheme.
2. One of these submissions, from Dr John Daugman of Cambridge University ('Appendix 5'), raises concerns about the public understanding of technological issues (especially biometrics) that underlie the successful implementation of the scheme. It claims that the public discussion has been "hijacked" by "scientifically misinformed assessments" and makes specific claims that the LSE Identity Project contains and repeats "persistent errors of fact".
3. As such, it takes the position that the LSE's work is both politically motivated and fabricated. The document sets out a number of serious allegations about the integrity of the researchers involved in the project. The scale of the misrepresentation is such that a thorough analysis would exhaust the time and possibly the patience of the Committee. We do however feel that a number of the claims made in the evidence must be rebutted and present these in detail below.
4. The LSE Identity Project has been committed to informing the public and policy debate about this important piece of legislation. It has been undertaken by a large, international team of experts acting in good faith. While Dr Daugman is perfectly entitled to disagree with our analysis and recommendations, we are concerned that he has presented a deliberately misleading account of our research to the Select Committee by claiming that it has been "hijacked" "by political campaigners" and a "parallel press campaign".
5. Dr Daugman's submission nicely illustrates the concerns raised in our submission to the Committee about "spurious, misleading and ad hominem attacks on the reports and its authors". When not presenting a conspiracy theory account of this major

piece of work, Dr Daugman's submission fails to understand the basis of our approach for considering scientific advice in areas where there are still significant differences of opinion about the ability of biometric technologies to operate at 'scale one' for a population of 60 million individuals, at a reasonable cost.

6. Our submission described our perspective on the need for due process when considering scientific advice in such areas where disagreements about scientific evidence still exist, a due process that considers and presents a range of differing, possibly contradictory evidence on the issue under discussion, so that the resulting deliberations are as fully informed as possible. We warned of the dangers of simply accepting one particular perspective or point of view and short-cutting this due process of deliberation. For this reason, our *main*¹ report presented a range of detailed, fully referenced, scientific opinion about biometric identification. The *main* report also provided similar research in the areas of national security, organized crime and terrorism; the international environment and obligations; identity fraud; policing and ID; race, discrimination, immigration and policing; the environment of public trust; the legal environment; security, safety and the National Identity Register and the IT environment in the UK. Dr Daugman may not agree with some of the research we report on, but this is not the same as suggesting that we are involved in a deliberate process of "disinformation".
7. In our submission we noted that "where advice appears to support the Home Office position, it is accepted without question and contrary evidence from the same source is overlooked". For example, whilst the US National Institute of Standards and Technology has, as Dr Daugman rightly points out, published research where a sample size of 6 million fingerprints and data collected in operational circumstances showed a performance consistent with the needs of a scheme on the scale of the ID cards scheme, another NIST report states that many of the problems with misidentification of biometrics can be attributed to "lower operational quality controls" during the collection process, i.e. that there are likely to be very real operational issues associated with the rolling out of the biometric enrollment and verification process.

¹ Since March 2005, the LSE Identity Project has issued four main reports. The first, *interim* report, was issued in March 2005 and its purpose was to attract criticism and suggestions leading to publication of the final version. The three-month consultation resulted in numerous improvements and some corrections. The second, *main* report, was issued in June 2005. In January 2006 we issued a research *status* report and in March 2006 we issued a further report on *Home Office accounting*. In this document we use these names to differentiate between these various reports.

8. In our opinion, the scientific advice to government needs to consider *all* of these issues, not just those that support the government's position.

Detailed comments regarding the LSE Identity Project

9. In paragraph 2 of his submission, Dr Daugman repeats the assertion that the LSE Identity Project is apparently written "not by the LSE Professors whose names appear on them, but by Simon Davies". This claim has been made previously by the Home Secretary Charles Clarke and was subsequently repeated by the Prime Minister. This assertion is entirely untrue as the LSE's Director, Howard Davies, has had to point out repeatedly: first in a letter to The Times published on July 2, 2005² and later to the Prime Minister (letter dated January 20, 2006³). This rebuttal has been discussed both in the Commons and in the Lords (see specifically Hansard 13 Feb 2006 from Column 1180 for the House of Commons and Hansard 16 Nov 2005 from Column 1092 for the House of Lords). Moreover, twenty two of the report's authors and contributors wrote to the Daily Telegraph (letter published July 7, 2005) to set the record straight and to associate themselves with the research. The *main* report lists fourteen professors who sit on the advisory board of the research project, and a further 63 contributors.
10. We are therefore puzzled by Dr Daugman's repeated assertion about sole authorship and can only presume that this is intended to make some "political" point. His repeated statements about "putative authors" and "ambiguous or contrived" authorship are both inaccurate and offensive to the large number of people who contributed to the 300 page *main* report.
11. In paragraph 3 Dr Daugman asserts that the LSE Report asserted repeatedly that "biometric identification simply would not and could not work". Again, this is simply untrue and we must presume that it is being made for political reasons. Chapter 13 of our *main* report (pages 169–186) reviews the available evidence on biometrics. We quote, for example, the US General Accounting Office that warns that "The performance of facial, fingerprint, and iris recognition is unknown for systems as large as a biometric visa system..."⁴ and a report from the NPL which argues that "Such a system would be a groundbreaking deployment for this kind of biometric application. 'Not only would it be one of the largest deployments to date, but aspects of its performance would be far more demanding than those of similarly

² <http://www.timesonline.co.uk/article/0,,59-1677135,00.html>

³ <http://is2.lse.ac.uk/idcard/daviestoblair.pdf>

⁴ U.S. General Accounting Office, *Using Biometrics for Border Security*, Washington D.C., November 2002 <http://www.gao.gov/new.items/d03174.pdf>.

sized systems; such existing systems are either not applied in the civil sector, or operate in countries where public acceptability issues are less prominent”⁵.

12. Our summary of the conclusions repeats this assessment: “The technology envisioned for this scheme is, to a large extent, untested and unreliable. No scheme on this scale has been undertaken anywhere in the world. Smaller and less ambitious systems have encountered substantial technological and operational problems that are likely to be amplified in a large-scale, national system. The use of biometrics gives rise to particular concern because this technology has never been used at such a scale”⁶.
13. The *main* report does question assertions about the “infallibility” of biometrics however this point has also been made in the Home Office submission to the Committee which stated that the key risks with biometrics are that “It may be impossible to prevent applicants falsifying (spoofing) their biometrics” and “The matching of newly enrolled biometrics against all those already enrolled may not be 100% reliable, raising the risk that a very small number of people may be able to enrol more than once without authorization” (paragraph 1.3 of the Memorandum from Government (‘Appendix 1’)) before outlining the various risk assessment measures that the Home Office will take to mitigate these risks, including automated checking of biographical footprints.
14. Paragraph 4 of Dr Daugman’s submission, speaks of “persistent errors of scientific fact” arising from confusing the iris with the retina. We have previously acknowledged that, in our *interim* report our lack of specific expertise in this area meant that we did confuse the two⁷. As a result of feedback on this point we sought specialist advice and made many corrections before issuing our *main* report in June 2005. The two reports were substantially different. The *interim* report was 116 pages. The *main* report was 305 pages. Indeed, our *main* report only mentions retinas twice (once in conjunction with the US Real ID proposals where the Act explicitly states that retina scan identification will not be used and once quoting from a Cabinet Office report on Identity Fraud). Given the differences between the *interim* and *main* reports, we are surprised that Dr Daugman chooses to refer to both releases collectively as “the LSE Report”. We believe this is a tactic intended to mislead the Committee.

⁵ ‘Feasibility Study on the Use of Biometrics in an Entitlement Scheme’, for UKPS, DVLA, and the Home Office, by Tony Mansfield and Marek Rejman-Greene, February 2003.

⁶ Main report, page 10

⁷ Research Status report, January 2006 Page 27

15. On the point of cataracts and iris biometrics, in our *main* report we quote from the previously mentioned GAO report which states: “People with glaucoma or cataracts may not be reliably identified by iris recognition systems”, we quote from another industry report that states “Subjects who are blind or who have cataracts can also pose a challenge to iris recognition as there is difficulty in reading the iris”⁸. We quote a medical report that states: “Cataract procedures are able to change iris texture in such a way that iris pattern recognition is no longer feasible or the probability of false rejected subjects is increased. Patients who are subjected to intraocular procedures may be advised to re-enrol in biometric iris systems which use this particular algorithm so as to have a new template in the database”⁹. On the basis of these diverse sources we state, in our discussion about notification of change of personal circumstances: “*It would appear*, for example, that the 200,000 or more people per year who undergo cataract procedures would be required to notify the government and (*possibly*) then be required to re-enrol”¹⁰.
16. Dr Daugman, in paragraph 5, gives two quotations to illustrate his claim that “Glaucoma, diabetes, cataracts, blindness, and pregnancy were all incorrectly said to affect the iris pattern, or its visibility”. The first quotation presented: *People with glaucoma or cataracts may not be reliably identified by iris recognition systems* is, as was pointed out above, a direct, fully attributed quotation from the 2002 GAO report on biometrics for border security. The second quotation *People with diabetes...will not be able to use this biometric method* is, once again, taken from a direct, fully attributed quotation (“Blind people or people with severely damaged eyes (diabetics) will not be able to use this biometric method.”), in this case from a European Commission report¹¹.
17. Paragraph 6 refers to a submission by the British Computer Society.

⁸ Penny Khaw, *Iris recognition technology for improved authentication*, SANS Institute, 2002
<http://www.sans.org/rr/papers/6/132.pdf>.

⁹ Roberto Roizenblatt et al., *Iris recognition as a biometric method after cataract surgery*, *BioMedical Engineering OnLine* 2004, 3:2.

¹⁰ Main report Page 154. Emphasis added.

¹¹ European Commission, *Final Report - Biometric Techniques: Review and Evaluation of Biometric Techniques for Identification and Authentication Including an Appraisal of the Areas Where They are Most Applicable*, April 1997,
http://66.102.9.104/search?q=cache:gbLP6j2f8KMJ:ini.cs.tu-berlin.de/~schoener/sembiometry/polemi97_eu_report_biometrics.doc+%22iris+recognition%22+%22blind+people%22&hl=en&ie=UTF-8.

18. Of the quotations cited in paragraph 7, the one regarding pregnancy was only made in the *interim* report and was not included in the *main* report. The quotation regarding patterns in the eye changing over time because of illness or injury is, once again, a direct quotation from a published source¹².
19. We are particularly concerned by Dr Daugman's selective quotation about the notion that iris images could be used for health diagnostics. We share his belief that 'iridology' is a medical fraud. For this reason, we state that "Many people have concerns about interacting with biometric technology" noting that "*from a scientific point of view, these concerns are without basis*"¹³.
20. In paragraph 11 of his submission, Dr Daugman asserts: "The Leader of the Opposition, David Cameron, stated on 15 January 2006 (BBC, Andrew Marr's Sunday AM Programme) that he based his objection to the ID Card proposals primarily on the LSE Report's conclusion that the system would be unworkable". This is false. David Cameron focused almost exclusively on the cost implications set out in the LSE *main* report.
21. Dr Daugman's submission claims that there were no "scientists" or "natural scientists" amongst the putative authors of the report. Numerous mathematicians and computer scientists have contributed to the report, several of whom co-authored the letter to the Daily Telegraph mentioned above. A larger number are listed in the acknowledgements sections of the LSE reports. Moreover, given the scope of the proposed scheme, this is not just a scientific or technological process but one that includes complex social processes, where the LSE has considerable expertise, for example, in the area of e-government¹⁴.

Detailed comments regarding other press comment

22. Dr Daugman's submission also makes claims about material entirely unrelated to the LSE Identity Project, most notably in paragraph 9, where he provides what he claims to be supporting information relating to a New Scientist article. He claims that Simon Davies was quoted in the magazine (placing these words within quotation marks) saying that iris recognition has a "False Match Rate of 1 percent;"

¹² Stephen Coleman, Biometrics: solving cases of mistaken identity and more. Source: FBI Law Enforcement Bulletin v.69 no.6 (June 2000), p. 9-16, ISSN: 0014-5688 Number: BSSI00019069, <http://www.nesbary.com/class/621w02/articles/coleman.htm>.

¹³ *Main* report page 175 and *Interim* report page 49. Emphasis added.

¹⁴ http://www.lse.ac.uk/collections/pressAndInformationOffice/researchTeachingExcellence/Experts_Advise.htm gives details of LSE experts who advise governments and public bodies, a number of whom were involved in the LSE Identity Project.

and that “for every 100 scans, there will be at least one False Match,” and that therefore in a nation of 60 million persons, “each person’s scan will match 600,000 other records in the database”.

23. This is incorrect and misleading. Although he was mentioned in the article, Simon Davies was not quoted. The quotes in Dr Daugman’s submission to the Committee were taken from the article and were not Mr Davies’ words.

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With contributions and comments from
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