



# DIALOGUE

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## FEATURE ARTICLE

# A Liberating Value to Biometric Technologies?

## *A Review of Mordini and Massari's Body, Biometrics, and Identity*

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by Jacob Moses, The Hastings Center

By now, the history of science and technology has established that nearly all technologies bring about both positive and negative effects, almost always contemporaneously. It's difficult to speak, however, about the promises and perils in the same breath, leading many commentators to adopt the symmetrical language of "dual-use," "costs and benefits," "pros and cons" — and often to defend for the sake of argument a position more extreme than the more moderate one they actually hold. This appears to the approach Mordini and Massari take in exploring the implications of biometric identification technologies for how the human body is defined and how the information it contains is obtained and used. Their frame of reference is on automatic biometric technologies for personal recognition.<sup>1</sup>

While the "pro" to biometric technologies is often cast pragmatically as a means to increase security and the "con" framed more abstractly in terms of privacy and identity integrity, Mordini and Massari suggest a move toward a middle ground in the often sharp biometrics debate. Attentive to the dominant arguments in debates about biometric identifica-

tion and writing from a deeply rooted understanding of the current and emerging technologies, they propose ways in which biometrics may not

“The authors debunk the desirable but usually illusory hope that the collection of biometric information can be limited to only a highly restricted set of information.”

necessarily harm individuals and the integrity of their identities. Indeed, they attempt to turn the debate about the negative consequences of the "informatization of the body" on its head by suggesting how biometric identification might help to *enhance*, rather than diminish, individuals' privacy and civil liberties.

Before discussing what they refer to as the unexplored question of the liberating value of biometric technologies, Mordini and Massari address

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the concerns about biometric function creep. They helpfully debunk the often desirable but almost always illusory hope that the collection of biometric information can be limited to only a highly restricted set of information. This is because the very nature of human bodies means that ancillary data about the individual is inevitably captured by biometrics. Yet they find some optimism in responsible data retention policies and creation of biometric templates that cannot be backtracked to the original source biometric (e.g., DNA profiling does not need to grant law enforcement authorities access to the full sequence of an individual's genome in order to make a highly reliable identity match). This is tempered

“The authors think biometric identification technologies may offer a way for individuals to cooperate in the construction of their public identities in a more democratic fashion.”

with cause for more concern looking forward, as the data collection schemes of many next generation technologies are far more redundant, utilizing data gleaned from multiple biometrics.

When they turn to the notion that there might be liberating value to biometric technologies, Mordini and Massari first sketch some of the major philosophical arguments against biometric identification technologies. One principle objection is that these technologies are “turning the human body into a passport or a password,”<sup>2</sup> and that by translating aspects of the body into data that can be collected, shared, and analyzed, we risk blurring the lines that separate human life from nonhuman life and from objects. The sharpest critics worry that this will offend our “human essence,” and viewing humans as data instead of persons could lead to an erosion of the rights that we associate with

being human. Thus, instead of seeing humans as citizen subjects, states might simply see bodies needing to be controlled and used like objects. On the other hand, the most extreme proponents of information technology see the move from the biological to the digital as a positive step forward away from comparatively rigid biology, thus empowering individuals to construct their identities with fewer constraints.

Mordini and Massari seem most comfortable with philosopher Irma van der Ploeg's view that humans and technology are deeply intertwined and that the human body is (in her words) “co-defined by, and in co-evolution with, the technologies applied to it.”<sup>3</sup> Proceeding from this

view, they argue that public identities are a prerequisite for the establishment of private ones: “One can claim her rights . . . and the right to refuse to be identified, only if she is an identifiable subject, if she has a public identity.”<sup>4</sup> This is a

point Mordini has argued persuasively elsewhere.<sup>5</sup>

According to the authors, biometric identification technologies may offer a way for individuals to cooperate in the construction of their public identities in a more democratic and polytechnic fashion, and may perhaps eventually replace the current centralized and bureaucratic forms of identification (birth certificates, passports, drivers' licenses, and the like). Moreover, they contend that “biometric technologies also promise to liberate citizens from the ‘tyranny’ of nation states and create a new global decentralized, rhizomatic scheme for personal recognition.”<sup>6</sup> They picture not one or two big brothers, but many little bothers; not a monolithic identification cathedral, but rather an identification bazaar.

While they do not explicitly spell out a set of requirements for liberty-enhancing biometrics, Mordini and

Massari seem to find the following qualities desirable:

- **Distributed** – data should not be rigidly controlled by a few massive organizations;
- **Flexible** – individuals should play an active role in shaping their identities, including their public ones;
- **Democratic** – the technology must afford individuals and groups some level of actual control over its design and deployment.

It will be interesting to see whether these qualities can be reconciled with the other qualities that Mordini and Massari call for in biometric technologies. Among these, “collectability,” “universality,” and “permanence” in particular seem to be in fertile tension with their picture of the decentralized identification bazaar.

At first glance, the market would seem to meet many of the liberty-enhancing requirements the authors identify. However, once we recognize that the market is not value-neutral, we see that while *in principle* biometrics may hold the potential to be liberating, as an empirical matter the technology “free market” that John McDermott calls “*laissez-innovate*” may be more likely to steer the technology toward supporting interests already in power, such as large corporations and centralized government bureaucracies.<sup>7</sup> In other words, the picture of an identification bazaar that Mordini and Massari paint may not emerge spontaneously in a policy and regulatory vacuum.

While globalization is already altering our political and economic identities and will continue to do so, there is a lively debate about whether this trend will result in a net good. By placing their discussion of biometrics in the broader context of globalization, the authors also remind us that the development and deployment of biometrics is not happening in isolation; identifying similarities and common themes in this debate can be fruitful and is arguably necessary. Many themes of the debate are, of



# Policy Forum Meeting on Biometrics and Bodily Difference Issues

By Karolina Owczynik, INM Zuyd University

On 4 March 2009, the Infonomics and New Media Research Centre at Zuyd University chaired the kick-off meeting of the Policy Forum on Bodily Difference Issues in Biometrics. The meeting took place in Brussels and was cohosted by the CEN (Comité Européen de Normalisation) Focus Group on Biometrics. The agenda, background document, and list of participants is available on the HIDE Web site at [http://www.hideproject.org/events/pf-body\\_issues.html](http://www.hideproject.org/events/pf-body_issues.html).

The Policy Forum on Bodily Difference Issues is one of three such forums under the scope of Work Package 4 on Critical Issue Identification of the HIDE project. The participants examined the ethical and social implications arising from the fundamental tension between large- and small-scale biometric applications, and how accessible these systems are for various user groups—particularly vulnerable groups such as children, the elderly, the disabled, refugees, and people from certain ethnic backgrounds.

Nicolas Delvaux, chair of host CEN's Focus Group on Biometrics, opened the policy forum with a presentation on the TURBINE (TrUsted and Revocable Biometric IdeNtitiEs) project. The goal of TURBINE is to develop innovative digital identity solutions that combine secure, automatic user identification through electronic fingerprint authentication with reliable protection of the biometrics data through advanced cryptography

technology. A main focus of the project is to develop innovative, privacy-enhancing technology solutions for electronic identity (eID) authentication through fingerprint biometrics. The presentation provided insight into the specific technological requirements for enhanced user control over the digitalized identification process.

In her presentation, the policy forum's coordinator, Irma van der Ploeg, discussed ways in which bodily differences play a role in biometrics. On one hand, emerging systems are using "soft biometrics" that automatically classify people according to bodily differences, such as ethnicity, gender, or age (an example is a new type of camera with face recognition that allegedly can classify passers-by according to age and gender). On the other hand, these technologies may fail to adequately accommodate bodily differences, thus risking exclusion of certain categories of people from system use. She then called for a difficult but necessary interdisciplinary dialogue that draws on various technological, legal, regulatory, and socioethical concepts in order to improve mutual understanding and new ways of framing and approaching problems.

The limitations of biometric identi-

fiers were one of the issues Bénédicte Havelange of the office of the European Data Protection Supervisor (EDPS) focused on in her presentation, "Biometrics in EU Large-Scale IT Systems: Age Limits and Other Issues." She described some of the

“Participants examined the ethical and social implications arising from the tension between large- and small-scale biometric applications, and how accessible these systems are for various user groups.”

work the EDPS had been involved in regarding biometrics in European systems. For example, EDPS has been involved in Eurodac (a European fingerprint database designed solely to identify asylum seekers aged 14 years and older); the Schengen Information System II (an information system that allows officials of EU member states to obtain information regarding certain categories of persons and property); and the e-passports system (using biometric data, such as digital photographs and fingerprints, in passports). Havelange emphasized the need for more political recognition of the imperfections of biometrics. For example, in 2005 there

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course, not limited to biometrics, but speak more broadly to how people interact with technology as a whole, especially when both the technology itself and its ethical, legal, and social consequences are steeped in uncertainty, as is the case with emerging and “enhancement” technologies. The resonance is especially striking when the authors write, “all technologies relate to the body because one of their ultimate aims is to enhance its ‘imperfect’ nature, to alleviate the tyranny of human material constitution, its physical limitations, its space temporal constraints, and its limited capacity to perform actions. ‘Technology’—as Mesthene puts it—‘is nothing if not liberating.’”<sup>8</sup> They go on to say that with “biometrics, for the first time in the history of human species, human beings have really enhanced their capacity for personal recognition by amplifying their natural, physiological recognition scheme, based on the appreciation of physical and behavioral apparatus.”<sup>9</sup>

A common defense of technology is to focus on its similarity with established, ubiquitous human behaviors. To highlight the continuity with established forms of identification that we consider natural parts of being human, the authors find that “by mimicking human modalities for

personal recognition, biometrics become a building block of the digital persona. Digital subjects need digital identifiers.”<sup>10</sup> The extent to which we should become—and already *have* become—digital subjects is a fascinating direction. Yet those who are concerned about the “informatization of the body” would continue to take issue with the move towards digitized subjects.

Using technology to improve the human condition is one very important aspect of the human experience, yet reflecting on the debates over human enhancement reveals that this is only one important aspect of humanity. There are many values that complement and compete; to take just one, gratuity and acceptance of “natural” physiology is a worthy foil to the creativity often expressed in technological problem-solving.<sup>11</sup> We might view personal recognition that involves “conscious, explicit, messages, which are usually conveyed by verbal languages, and unconscious, implicit, messages that are mostly channeled by non-verbal (bodily) languages”<sup>12</sup> to be superior in many ways to even the most flexible, self-shaped electronic identity. And perhaps we may not view human-to-human authentication as a flaw or less valuable than technology-mediat-

ed exchanges. This may be one of the concerns entangled in the slippery and charged language of “human dignity.”

In the end, Mordini and Massari present a thoughtful balance of worry and optimism about biometric identification technologies. There are good reasons to be concerned about biometric identification, and good reasons to try to chart a hopeful path forward. The best work often raises more questions than answers, and Mordini and Massari’s vision for decentralized, liberty-enhancing biometrics raises many important questions in need of further exploration.

1. Mordini E, Massari S. Body, biometrics, and identity. *Bioethics* 2008;22(9):488-498.

2. *Ibid.*, p. 494.

3. *Ibid.*, quoting Irma van der Ploeg, p. 494.

4. *Ibid.*, pp. 494-496.

5. For example, Mordini E. Nothing to hide: Biometrics, privacy, and private sphere. *Lecture Notes in Computer Science* (Berlin/Heidelberg, Germany: Springer, 2008).

6. Mordini and Massari, p. 496.

7. McDermott J. Technology: The opiate of the intellectuals. *New York Review of Books* July 31, 1969, <http://www.nybooks.com/articles/11253>.

8. Mordini and Massari, p. 495.

9. *Ibid.*, p. 496.

10. *Ibid.*, p. 494.

11. Parens E. Authenticity and ambivalence. *Hastings Center Report* 2005;35(3):34-41.

12. Mordini and Massari, p. 493.

was no debate about the introduction of biometrics in passports. She also pointed out the need for more thorough research on the accuracy of the systems obtaining children's fingerprints under real conditions to inform the ongoing work by the EDPS regarding the appropriate lower age limit of children providing fingerprints.

Next, Ruzayda Martens from the International Organization for Migration (IOM) spoke about IOM's experience with biometric identification problems in the context of international migration. She explained migration procedures were increasingly misused after the 9/11 attacks on the World Trade Center "as tools for combating terrorism based on concerns that foreigners can pose a threat to the security and safety of a country and its nationals." Ruzayda shared some of the IOM's practical experiences, showing a trend that migrants from developing countries increasingly try to "stay under the radar" to avoid biometric enrollment as long as possible.

The usability—or lack thereof—of biometrics for people with disabilities was the theme of Roel van Houten's presentation. Van Houten, a member of the CG-Raad (Dutch Council of the Chronically Ill and the Disabled), described two scenarios with different sets of problems. One scenario consists of biometric systems that provide a system operator to assist users. Yet it remains unclear whether system operators will be able to provide adequate assistance for the full spectrum of people with various disabilities. The second, more problematic scenario consists of biometric systems that people are supposed to use without any assistance—which means that people with disabilities will be disproportionately burdened when using these types of biometric systems. Van Houten emphasized the need to make alternative options available to people who have problems using biometric systems and contended that such alternatives should be designed and offered in ways that will ensure that people feel

they are being treated respectfully.

Next, Annemarie Sprokkereef from the Tilburg Institute for Law, Technology and Society (TILT) gave a presentation entitled "Why Law Has Failed to Promote Good Biometrics." She and her colleague Paul de Hert recently completed the report, "Biometrics as a PET (Privacy Enhancing Technology) in the Dutch Private and Semi-Public Domain." Sprokkereef noted that as a general finding, she and de Hert identified a lack of awareness about potential data protection issues, as well as system weaknesses and the limitations of users/buyers of biometric technology systems.

The afternoon sessions included a

presentation about accessibility issues and biometrics by Asbjørn Hovstø (ITS, Norway) on behalf of Mario Savastano (University of Naples). The presentation focused on the development of ISO standards involving guidelines for the stages in the life cycle of a system's biometric and associated elements and on some of the cross-jurisdictional and societal aspects of biometrics.

Another perspective on usability issues was offered in "Increasing the Usability of the Biometric Solutions," a presentation by Gillian Ormiston of the Biometric Identity Management and Security Solutions Department of Motorola Ltd. Ormiston, who was involved in the development and

## Policy Forum Participants

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*Optel Ltd.*
- Agnieszka Bicz  
*Optel Ltd.*
- Isabel Borges  
*AGE, the European Older People's Platform*
- Katarzyna Cuadrat-Grzybowska  
*European Data Protection Supervisor*
- Nicolas Delvaux  
*Sagem Sécurité*
- Simon Dobrisek  
*University of Ljubljana, Faculty of Engineering*
- Bénédicte Havelange  
*European Data Protection Supervisor*
- Paul de Hert  
*Tilburg Institute for Law, Technology and Society*
- Ingrid Hoofd  
*National University Singapore, Communications and New Media*
- Roel van Houten  
*Vizirus: Dutch Organization of the Blind*
- Sophie In't Veld  
*European Parliament*
- Katja Lindskov Jacobson  
*CESAGEN*
- Victor Lee  
*International Biometric Group*
- Paul McCarthy  
*Cesagen*
- Ruzayda Martens  
*International Organization for Migration*
- Karen Maschke  
*The Hastings Center*
- Emilio Mordini  
*Centre for Science, Society and Citizenship*
- Lisbeth Witthoefft Nielsen  
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- Alexander Nouak  
*Fraunhofer Institute for Computer Graphics Research*
- Karolina Owczynik  
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- Annemarie Sprokkereef  
*Tilburg Institute for Law and Technology*

implementation of several of the large EU biometric systems, currently is involved in the design and implementation of biometrics in the visa application procedures of Norway. She pointed out that many usability issues have to do with seemingly mundane aspects—like size of the office in which the system is supposed to be installed, or the height of the counter on which fingerprint scanners are placed. She explained that for biometric systems to be really usable—for example, when operators in an embassy are enrolling visa applicants—designers need to become far more aware of the actual work environments in which the systems will be fitted, as well as the processes utilized there. Ormiston emphasized that these factors are extremely important for input data quality, and thus for overall system performance and effectiveness. Finally, she pointed out that when usability issues are discussed, important stakeholders like border guards who actually use biometric operating systems are seldom part of the dialogue.

In the final presentation, Ben Schouten—of Fontys University of Applied Sciences, the Netherlands, and a member of the CEN Focus Group on Biometrics—talked about the privacy aspects of using soft and multimodal biometrics for automated authentication. He explained how soft biometrics such as body weight, height, age, or gender may be used to enhance “classic biometrics” performance, or in an anonymity-preserving way. Schouten insisted, however, on the need for awareness of the potential risk of discrimination such technologies pose.

**Roundtable Discussion of the CEN Roadmap**

The policy forum ended with Schouten moderating a roundtable discussion about CEN, the European committee for standardization. CEN facilitates the removal of trade barriers for European industry and consumers. CEN’s Biometrics Focus Group was established to improve information flow on the current standards. Schouten invited the forum participants to provide input for

developing a roadmap for biometric standardization issues in Europe, particularly involving the social and cross-jurisdictional aspects. He reiterated the key questions from the forum’s mission statement: Where and how do problems relating to biometrics and bodily differences occur and whom are they affecting in particular? Moreover, what is and should be the role of standardization efforts in mitigating these problems?

Forum participants noted that a key issue to take into consideration involves biometric identification of children in various contexts. Participants also pointed out that more attention should be given to the question of whether the use of biometrics is an unavoidable means to achieve the various ends, particularly given the potential for these technologies to be used to control vulnerable groups.

These and other issues will continue to be addressed and discussed online in the Policy Forum on Bodily Difference Issues ([http://www.hide-project.org/events/pf-body\\_issues.html](http://www.hide-project.org/events/pf-body_issues.html)).

## HIDE Past Events

- **5–6 June 2009**  
Policy Forum on Privacy as Contextual Integrity, Prague, Czech Republic
- **4 March 2009**  
Policy Forum on Body Issues, Brussels, Belgium
- **6 February 2009**  
Policy Forum on Outsourcing of Systems for Detection, Identification, and Authentication, London, UK
- **31 October 2008**  
Embedded Technology Focus Group, Maastricht, the Netherlands
- **15 September 2008**  
System Interoperability Focus Group, London, UK
- **9 September 2008**  
Technology Convergence Focus Group, Paris, France

## HIDE Upcoming Events

- **2–3 July 2009**  
HIDE workshop on International Data Sharing and Biometric Identification—The Ethical Issues in an Asian and International Context, Singapore City, Singapore
- **17–18 September 2009**  
HIDE workshop on Restrictions in the Implementation of EU Data Protection Directive for Public Interest, Security and Defense, Ljubljana, Slovenia
- **16 October 2009**  
Focus Group Meeting on Privacy Enhancing Technologies Manchester, UK
- **17 November 2009**  
Focus Group Meeting on Technology Convergence Paris, France
- **7 December 2009**  
Focus Group Meeting on System Interoperability London, UK

For more details, visit [www.hideproject.org](http://www.hideproject.org).

## Recent Publications

- Clark N, Verkaik R. Internet privacy: Britain in the dock, “Big Brother” state comes under fire as European Commission launches inquiry into secret surveillance of Web users. *The Independent*, 15 April 2009.  
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**Fraunhofer Institute for Computer Graphics Research**  
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