**Chapter XI**

# Biometrics, Human Body, and Medicine:
## A Controversial History

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## Abstract

*Identity is important when it is weak. This apparent paradox is the core of the current debate on identity. Traditionally, verification of identity has been based upon authentication of attributed and biographical characteristics. After small scale societies and large scale, industrial societies, globalisation represents the third period of personal identification. The human body lies at the heart of all strategies for identity management. The tension between human body and personal identity is critical in the health care sector. The health care sector is second only to the financial sector in term of the number of biometric users. Many hospitals and healthcare organisations are in progress to deploy biometric security architecture. Secure identification is critical in the health care system, both to control logic access to centralized archives of digitized patients' data, and to limit physical access to buildings and hospital wards, and to authenticate medical and social support personnel. There is also an increasing need to identify patients with a high degree of certainty. Finally, there is the risk that biometric authentication devices can significantly reveal any health information. All these issues require a careful ethical and political scrutiny.*

# Introduction

No longer a science fiction solution, biometric technologies are the most important innovation in the IT industry for the next few years. Early biometric identification technology was considered extremely expensive. However, due to constant developments in computer technology and reduction in prices, along with improvements in accuracy, biometrics have begun to see widespread deployment. For example, a fingerprint scanner that cost $3,000 five years ago, with software included, and $500 two years ago, costs less than $50 today. As a result, biometric systems are being developed in many countries for such purposes as social security entitlement, payments, immigration control, and election management.

Broadly defined, biometrics[1] are just methods of observing and measuring relevant attributes of living individuals or populations to identify active properties or unique characteristics. Biometrics can look for patterns of change by measuring attributes over time or look for consistency by measuring attributes of identity or unique differentiation. When looking for patterns of change, biometrics can be considered a tool for research, diagnosis, or medical monitoring. When looking for consistency, biometrics become a useful vehicle for identifying and verifying identities, because they can differentiate individuals. However this distinction, though basic, should be considered partly theoretical. Most biometrics could be used both to differentiate individuals and to identify medical conditions. It depends on its architecture whether a system, designed for verifying consistency, can be turned into a system that looks for specific pattern of change over time. From a mere technical point of view this is often feasible.

Biometric system for measuring consistency (that is to differentiate individuals) can be used in two ways. The first is identification ("who is this person?") in which a subject's identity is determined by comparing a measured biometric against a database of stored records—a one-to-many comparison. The second is verification, also called authentication ("is this person who he claims to be?"), which involves a one-to-one comparison between a measured biometric and one known to come from a particular person. Also this distinction is partly theoretical because it is largely based on the potential of each technology for building large databases. As a matter of fact all biometrics can be used for verification, but different kinds of biometric vary in the extent to which they can be used for identification. Identification mode is also more challenging, time-consuming, and costly than the verification mode.

Biometric identifications systems consist of a reader or scanning device, a software that converts the scanned information into digital form (template), and, wherever the data is to be analyzed, a database that stores the biometric data for comparison with entered biometric data. The incredible variety of human forms and attributes might seem to reveal a large number of potential attributes for biometric identification. Good biometric identifiers, however, must be:

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