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ADVANCES IN AUTOMATED DETECTION OF FINGERPRINTS

By Simson L. Garfinkel

San Francisco police in the near future may tell a suspect, "I don't want to know your name. Just put your fingers here." In five seconds the officer will get a complete printout of the person's rap sheet by way of a computer terminal in the patrol car.

"This is only a couple of years away -- the technology is here now," says Detective Ken Moses. San Francisco is now installing the first "live-scan electronic booking station" in which an arrested person's fingerprint is scanned directly into the computer, rather than having it inked on a ten-finger print card.

San Francisco's use of Automatic Fingerprint Identification System (AFIS) was described by Moses at a SEARCH National Conference on Juvenile and Adult Record Systems, held in Boston last month. In the first year after the SFPD installed its AFIS in February 1984, the burglary rate dropped 27 percent, according to Moses. The system allowed the department to determine the identity of burglars from latent fingerprints left at crime scenes and resulted in putting more than 900 persons behind bars who otherwise would have committed 100 or more crimes a year.

Fingerprints are found at 40 percent of all burglary sites, and 28 percent result in positive identifications. In San Francisco, a positive fingerprint ID results in a conviction 93 percent of the time. "This is an application [of technology] to the safety of society," said Moses. "With AFIS, police can actually lower crime rates on specific actions -- something that police have never been able to do before."

AFIS technology is not new [see PJ May 75]. The FBI has used it since 1976, and Minneapolis became the first city to install a system in 1979. But in 1988 the technology has become available to most major police departments. Jurisdictions with AFIS cover 52 percent of the U.S. population, according to Robert Marx, a systems specialist with SEARCH Group Inc., the national consortium for criminal justice information and statistics. That should increase to 65 percent by the end of 1989.

AFIS systems have three main uses: to verify the identity of new arrestees; to

AUTOMATED FINGERPRINT SEARCH (Continued from page one)
identify a suspect from latent fingerprints at a crime scene; and to screen
applicants for licenses that require a crime-free background.

AFIS works by scanning the image of the fingerprint and finding each point
where the ridges start, stop or split. These places, called "minutiae points,"
are used to form a geometric figure that rapidly can be compared with other
figures previously stored in the computer. Systems made by the same manufact-
urer can be linked by networks to allow geographically distant police depart-
ments to search each other's databases of stored prints. The San Francisco
computer is connected to a state-wide network called CAL-ID, through which a
print can be searched overnight. "In the works is a Western States network,"
said Moses, "that will combine five or six states."

The FBI's AFIS system conducts about 27,000 searches a day, 13,000 of which
are for non-criminal justice purposes (like employment and license screening),
according to Automated Fingerprint Identification Systems: Technology and
Policy Issues, a Department of Justice report written by SEARCH. The database
holds fingerprints of 18 million offenders born in 1929 or later years. By
comparison, San Francisco has 300,000 prints, but the number is growing rapidly.

It takes the computer in San Francisco from 50 to 120 seconds to identify a
person, using all 10 fingerprints, Moses said. An identification from a single
print takes about seven minutes. The CAL-ID received national attention when
police fed it a single print lifted from an automobile and broke the "Night
Stalker" rape and murder case that haunted California.

Moses called fingerprints "the most democratic" tool for law enforcement; re-
sults of an AFIS search are reported by code, without any information about
the suspect's name, race, or sex. A fingerprint "is probably the most anon-
ymous record you can have," said Moses. "They exonerate far more people than
they incriminate. There is no such thing as an unreliable fingerprint; it is
either readable or not."

"A lot of states hamstring their AFIS systems by not putting juvenile data
in," he said, arguing that since most property crimes are committed by juve-
niles, it only makes sense to include their fingerprints in the database that
is searched for latent print matches.

Changes in Microfilm -- Traditional uses of microfilm for information storage are
       being eclipsed by computer and laser technologies, especially in Europe, says a
       special report from Frost & Sullivan, the market research firm in New York and
       London. WORMS are the wave of the future -- Write Once, Read Many times laser
       disks. They will account for 65 percent of the market by 1992. WORM techno-
       logy can be used to verify signatures and retrieve account information in banks,
       for instance. Computer Output on Microfilm (COM) will dip to five percent.

                                      QUOTABLE

"In my office if they meet somebody [in a bar] one night they'll run it through

DMV in the morning -- check the plate number, see if he is married and lives

alone."

                                      John Carway, Nassau County, N.Y., Probation
                                      Department, describing how employees
                                      use the computer system in his office
                                      to check out people they have met.