Chapter 4

THE STATE FORENSIC ARCHITECTURE

Forensic Psychologists and the Art of Scientific Interrogations

> *Field Note 3*: The new forensic science university had plush corridors. As I sat comfortably in the personal assistant's room, the curious men helpfully handed me glossy brochures about the university. I entered the director's room a little nervously since the interview was unexpected based on a random email unlike some of my other interviews. The brief interview confirmed everything I had found about the techniques, but the question that was most difficult to answer in the conversation was why I, as a political science professor who had no background in psychology, criminology, or physiology, was interested in studying these techniques.

This chapter is a long answer to that question and considers the reasons these techniques matter for political theorists, legal scholars, and human rights activists.

In India lie detectors have been used since the 1960s and 1970s, although they were not well publicized. Narcoanalysis and brain scanning became more visible in the early 2000s. Over time, these techniques became the purview of forensic psychologists, who in turn became prominent as part of the state forensic architecture.[1]

Operating in hospitals and forensic science laboratories (FSLs), forensic psychologists unofficially replaced the police as interrogators. The emergence of truth machines in India was thus closely related to forensic psychologists' efforts

to attain legal recognition, both individually and professionally, and to join the states forensic architecture, where they became embedded almost like cyborgs.[2] This change has implications for understanding state power and legal violence in liberal democracies.

Three public figures appear in the story of expansion of truth machines: Dr. S. L. Vaya, Dr. C. R. Mukundan, and Dr. S. Malini.[3] Vaya, a pioneer in forensic psychology in Gandhinagar, Gujarat, received the 2011 C. S. Kang Oration Award from the Indian Association of Clinical Psychologists.[4] Mukundan, mostly based in Gandhinagar, Gujarat, invented the brain electrical oscillation signature test, the Indian counterpart of brain fingerprinting, which he successfully patented. Malini, a psychologist based in the FSL in Bangalore, Karnataka, was visible in the emerging popularity—and notoriety—related to truth machines.

In deploying these techniques, the forensic psychologist mediates the relationship among science, the police, and the legal system. This expert's legal and scientific status, however, was at first unclear. Unlike scientific experts who present bodily evidence gleaned from DNA, autopsy, or serology, forensic psychologists interact with live suspects. Indeed, as one explained to me, psychology is one of few sections in an FSL where live suspects enter.[5] Scientific literature may suggest little validity or reliability for truth machines, especially for criminal justice, but early on, forensic psychologists expressed excitement about their potential for helping the overloaded criminal justice system. Invoking science, alongside the ability to read a suspect therapeutically, the forensic psychologist becomes an expert unconstrained by law. Indeed, only when attempting to define their expertise legally, the scientific falsity and unreliability of truth machines get revealed. Once exposed, they become subject to debate. The notoriety of forensic psychologists is also linked to interpersonal rivalries amongst them.

The Indian police, as agents of postcolonial state power, remain closely connected with torture, the technique that most directly inscribes a sovereign's power on the body of the accused. In contrast, the forensic psychologist, with a combination of science and art, appears to enable an innovative regime of interrogation that avoids the travails of torture. Ultimately, however, forensic psychologists reinforce the structure of Indian policing, which long emphasized violence and confession. The state forensic architecture thus reflects the convergence of contingency, materiality, and expertise that fits a modernizing

discourse marked by uncritical claims of progress by the postcolonial state and police.

FORENSIC PSYCHOLOGISTS AS EXPERTS

Truth machines—narcoanalysis, brain scanning, and lie detectors—have origins associated with specific individuals (see chapter 3). In India the police came to accept the claims of experts. Forensic psychologists, as experts, then became part of the state's planned expansion and development of the police, the bureaucratic agents of state power. The process encompassed changes in legal procedures, legitimation through media and state initiatives, and a range of material conditions, including drugs, courses, machines, and laboratories. These constituted the state forensic architecture, a unitary structure derived from contingent conditions.

Here I draw from Timothy Mitchell's classic work, *Rule of Experts*, where he relates the role of expertise in creating a narrative of progress to the development of science in postcolonial Egypt. "From the opening of the twentieth century to its close," Mitchell argues,

> the politics of national development and economic growth was a politics of techno-science, which claimed to bring the expertise of modern engineering, technology, and social science to improve the defects of nature, to transform peasant agriculture, to repair the ills of society, and to fix the economy.[6]

Forensic expertise in India emerged to resolve the ills of policing and the criminal justice system, notably the courts' overload and the high incidence of third-degree interrogation. Analyzing experts and techno-politics, Mitchell emphasizes contingency and both human and nonhuman agency: "The expertise was hybrid, not an exterior intelligence applied to the world, but another artifactual body" such that "solutions were worked out on the ground."[7] Experts on the ground in India were responsible for the adoption, innovation, and continued development of truth machines. Verification by science or the state was initially deemed irrelevant.

The experts working at the interface of forensics and healing play an important role in this story. An analogy is Sameena Mulla's *The Violence of Care*, a

detailed ethnography of forensic nurses in Baltimore, Maryland, in the United States.[8] As Mulla shows, despite these nurses' intent to care therapeutically for rape victims, the institutional context—time, persistent rape myths, documentary and visual practices—shapes their professional practice to conform more to the needs of the legal system. Nurses know that few cases ever go to trial, but they nonetheless enact "violence of care" for the victims. "This violence is born not from the intentions of individual forensic nurses who consciously set out to alienate the victim-patient with whom they are working," Mulla explains, "but rather from the particular institutional, professional, and historical location of forensic sexual assault intervention."[9]

The forensic needs of a legal system, therefore, determine forensic practices. Forensic psychology is a feminized profession, and, like nurses and clinical psychologists generally, practitioners claim to be involved in therapeutic care.[10] Here, however, the intent is not to preserve evidence to fit a client's narrative but to glean a confession or information to solve a case. Forensic psychologists have a peculiar relationship to the machines and drugs they use. Mitchell applies the notion of techno-politics to experts, an alloy of human and nonhuman, intentional and not, that emerges from a process of manufacture in which the intentional or the human always gives way to the unintended.[11] For forensic psychologists, I apply the term "cyborg," a merging of human and machine, constantly morphing into one or the other, sometimes emphasizing the mechanical (science), at other times the human (therapeutic art). Distinguishing themselves from police, forensic psychologists, as cyborgs, help create the state forensic architecture.

Emergence of Forensic Psychology and the Polygraph

Lie detectors gained prominence in India primarily because of the advocacy of forensic psychologists, who vouched for their utility. These efforts eventually gained recognition from the Central Bureau of Investigation and the Ministry of Home Affairs (MHA), and they featured in complaints to the National Human Rights Commission. The claims of individual forensic psychologists first connected the components of forensic architecture: drugs, machines, laboratories, and the police. In the process, these semi-state actors claimed expertise in addressing the ills of the criminal justice system, especially the prevalence of third-degree interrogation.

According to one of the forensic scientists I interviewed, the earliest use of the lie detector in India can be traced to the late 1960s.[12] In 1968, the Central

Forensic Science Laboratory (CFSL) in Delhi, under an eminent psychologist Dr. A. K. Ganguly may have been the first to use the machine. Once its "potentiality" was confirmed, other laboratories started acquiring it.[13] But even Ganguly was uncertain about its full potential, claiming that only recovery after a confession could confirm the machine's veracity. Otherwise, he cautioned, a suspect's answers could be affected by fear of the machine.[14] As one of his colleagues explained:

> In fact, many of the people, the investigating officers, unfortunately they say that, you know, we could not get information; now this machine will tell you, and if you don't do that one, it will be deleterious to your health, . . . so the people, you know, do confess under duress though they have not committed a crime.[15]

Information from a polygraph test was never admitted as evidence, he elaborated, but recovered items could be admitted under Section 27 of the Indian Evidence Act (as discussed in chapter 2).[16]

Subsequently, a number of FSLs acquired forensic psychology and polygraph divisions, which generally functioned without controversy. In its 2013–2014 report, the MHA confirmed that the polygraph in CFSL was first set up in 1973.[17] A study on the use of lie detectors between 1974 and 1976 in 115 cases and 263 suspects concluded, "The polygraph does render valuable help to investigating officers in detecting the guilt of a suspect and *inducing him to admit guilt*. It can also reveal the innocence of a suspect and check the veracity of the statement of a complainant."[18] A. K. Ganguly, father of polygraphy in India, and S. K. Lahiri, his senior scientific assistant, write revealingly about the examiner as interrogator:

> [The] polygraph examiner's most important task and responsibility consist in the diagnosis of deception from an examination of the physiological changes recorded by the instrument which makes absolute sense. Along with his skill in that respect, he must, however, be able to perform the next most important task to interrogate a subject skillfully with a view to obtain a confession from him in case he is guilty.[19]

In 1976 Ganguly and Lahiri published an article titled "Polygraph" in the journal of the American Polygraph Association and reported fifty cases in India

between January 1974 and December 1975, involving 120 suspects, witnesses, and complainants. Of these, 41 suspects had been questioned about theft and roughly 30 suspects about murder. About 28.3 percent of suspects were found to be deceptive, and 69.2 percent were not. In at least eight cases involving 11 suspects, the "lie detection test proved useful as the suspects admitted their guilt to the Police."[20] The study thus reports the prevalence of polygraphs without discussing their reliability.

Forensic psychologists gained some recognition in the 1980s, with the development of their profession most evident in Gujarat, where Vaya authored a report during her time in Gujarat's FSL and India's first forensic university (its website claims it to be the first such university in the world).[21] Widely known as Vaya Madam, her name came up constantly in relation to truth machines in all the laboratories I visited. The lie detection division was founded in Ahmedabad's FSL in 1982, but the need to "widen the scope of the investigation while examining suspects" led to a forensic psychology branch in 1988.[22] The lie detector was inserted into the *Gujarat Police Manual* in 1992, with guidelines for its use:

> In important crimes wherein no direct evidence is available and it is suspected that witnesses/suspects are suppressing the truth, the investigating officer [IO] can avail the facility of *scientific techniques of interrogation* of such persons through the lie detection, hypnosis[,] etc. at the forensic science laboratory in their forensic psychology division.[23]

An effort to promote lie detectors to mediate police practice thus involved a forensic psychologist, administrative permission, and modifications to a local manual.

Courts' recognition of forensic psychologists provided additional incentives to innovate. Some cases involved rape victims, reflecting the emphasis on using the polygraph on complainants, with the expectation that it would help both the innocent and the police in noncustodial situations.[24] The cases gradually extended to theft and *dacoity* (armed robbery by gangs) and to murder and terrorism. The use of lie detectors in criminal cases thus gained momentum from the 1980s onward. By 1988 the courts had come to recognize that polygraphs could be helpful. With them, investigative officers gleaned more information. Even the CBI started sending cases to the FSL in Gujarat.

Attempts to highlight the significance of the polygraph appeared in the CBI journal explaining its use as a good alternative to third-degree interroga-

tion. Two authors associated with the lie detector division in Karnal, Haryana, concluded:

> Polygraph examination is a scientific method of interrogation. . . . (a) It is effective in such cases where [the] third degree method does not work. (b) Where the third degree method cannot be applied, and (c) It can help in eradicating the use of third degree methods which is a cognizable offence as defined under various Sections of the Indian Penal Code.[25]

These conclusions were based on five cases ranging from theft, to murder, to death by lightning, all solved through polygraph where the third degree had failed. For example, the complainants in a murder case were subjected to the polygraph, and its results led to confessions of their own involvement in the murder of the wife of one of the complainants.[26]

These reports highlighted the role of forensic psychologists.[27] As Vaya and J. M. Vyas explain, "In the whole process, [the] mental set of a person taking the polygraph test play[s] an important role which needs psychological handling."[28] Commentators further noted the difference between the United States and India: in the U.S. "lie detector examiners usually have [a] police background; rarely, if ever, do they have [the] training required of psychological and medical specialists."[29] In India, however, forensic psychologists emphasized that most polygraph examiners had postgraduate degrees in psychology and six months of in-service training.[30] A legally ambiguous argument further asserted that polygraph tests conducted by psychologists, rather than police, would render admissible confessions.[31]

The confessions heard and deceptions ascertained during pretest and posttest interviews further highlighted the role of forensic psychologists. As Bibha Ray and S. R. Singh report in one case, "On the basis of the polygraph examination, they revealed in the pre-test interview they confessed their and their parents' involvement in the murder which they had been denying prior to the polygraph examination in spite of the third degree methods used by the police.[32] Posttest interviews similarly revealed deception or led to recovery of stolen items.[33] With psychological training, one forensic psychologist asserted, questioning involved no touching, privacy issues, or drug contraindications. Although most cases involved corroborative, not central, evidence, she noted, forensic psychologists had solved cases, notably an ATM burglary and a case of infanticide.[34]

Eventually, the NHRC received complaints. In May 1997, Inder Choudhurie lodged a complaint about the use of lie detectors along with mental and physical torture, including the injecting of an intravenous drug, while he was in the Shimla jail. Choudhurie wanted both the NHRC and the CBI to conduct an inquiry.[35] The NHRC reports focused on the lie detector and drug, not on mental and physical torture. Perhaps the illegality of torture required no comment, but its casual mention is striking. The NHRC acknowledged both its failure to take up the case and the high court's rejection of Choudhurie's petition but did create guidelines, in the absence of law, for the use of lie detectors. Finally approved in November 1999, the guidelines mention other complaints regarding the use of a lie detector after injecting a drug.[36]

In the official circular sent to all states and union territories, the NHRC notes two concerns. First, the tests had been conducted under coercion and without informed consent, making them violations of the self-incrimination clause of Article 20 (3) of the Indian Constitution. Second, these techniques violated Article 21 (procedure according to law and expanded conception of due process), which requires techniques of interrogation to be noninvasive. In making these determinations, the commission also makes a very important distinction among three kinds of volition: one where the accused voluntarily asks to take a lie detector test to prove innocence versus a second and a third kind where the police implicitly or explicitly link taking the test to freedom. The commission reiterated the importance of voluntary consent. According to the guidelines, consent is to be recorded in front of a judicial magistrate, who would explain that it amounted not to a confession but to a statement before the police, because, in India, confessions to police in routine criminal cases are inadmissible in court.

While the NHRC guidelines are in line with the conditions for interrogation and confession, two are particularly noteworthy:

> (vii) The actual recording of the Lie Detector Test shall be done in an independent agency (such as a hospital) and conducted in the presence of a lawyer. (viii) A full medical and factual narration of manner of the information received must be taken on record.[37]

The emphasis on a hospital setting and medical narration suggests a concern about a pattern of cases in which drugs had been injected, yet the commission sidestepped the ambiguous medical impact:[38] "The Commission had been re-

ceiving a number of complaints pertaining to the conduct of this test, said to be administered under coercion and without informed consent. The test is allegedly conducted after a certain drug is administered to the accused."[39] Not until narcoanalysis emerged as a distinct method of "scientific interrogation" was drug use with the lie detector explored. Also unaddressed were questions of inherent coercion and unreliability.

Meanwhile, lie detectors continued to be used in laboratories. Vaya's report from Gujarat mentioned a record of about 5,504 cases from 1983 to 2007 in which lie detectors were used, with the highest numbers, 520 and 644, in 2004 and 2006, respectively. The machine was used principally against suspects (3,323 cases) and those accused (643 cases), but it was also used against witnesses (383 cases) and complainants (474 cases). Thirty percent of the cases came from in the city of Ahmedabad. The results of these cases appear to be mixed.[40] Deception was identified in 1,269 cases but none was observed in 2,585 cases, while results were doubtful or inconclusive in 248 and 139 cases, respectively.

Questionnaires were sent to police stations to assess the usefulness of the polygraph in criminal investigations. Results suggested utility for the investigating officer in 118 cases and lack of utility in 104 cases. In 88 cases the report was presented in the court, and in 22 cases it was just considered but not presented. While data from all laboratories are not available, the MHA does note in its 2013–2014 report that, at the CFSL, "since 1973 to-date, examination of approximately 11,500+ subjects have been conducted for detection of psychophysiological deception."[41] All five laboratories that I visited noted procedures, and at two sites, staff pointed to forms that ensured consent from the accused. The tests, however, were considered noninvasive and hence were conducted in a laboratory. I heard no mention of drugs other than those used in narcoanalysis.

Forensic psychologists sometimes appeared as experts in court, but before the Supreme Court's intervention in 2010, courts determined the validity of evidence on a case-by-case basis. So from 1973 to the early 2000s, only sparse evidence suggests the use of lie detectors, the duress the machines might create, or the concomitant use of drugs.[42] Nonetheless, this period not only acknowledged the role of lie detectors in investigations but also, more importantly, foregrounded the partly hidden role of psychological experts who could resolve one of the major issues concerning the Indian police. Forensic psychologists explicitly promoted solving cases with scientific machines rather than third-degree interrogation. They considered their skills more psychological than technical.

Disputes in other parts of the world over the validity of the polygraph (as indicated in chapter 3) make no appearance in these discussions. By itself, however, the lie detector seemed insufficient for the police to embrace wholeheartedly—until, that is, forensic psychologists pointed to additional truth machines.

Innovations in Forensic Psychology: Claims and Visibility

In the early 2000s, forensic psychologists gained more public visibility as two other methods—BFP and BEOS—were increasingly used alongside polygraphs and the more controversial and invasive narcoanalysis. Techniques began to be used consecutively: first the lie detector, then brain scanning, followed by narcoanalysis, although sometimes in reverse. Polygraphs were used in a number of laboratories, both public and private,[43] but only three state FSLs—in Mumbai, Maharashtra; Bangalore, Karnataka; and Gandhinagar, Gujarat—could conduct all three tests.[44]

Forensic psychology and forensic psychologists gained importance as claims to the revolutionizing potential of truth machines became public. By 2005–2006, officials were proclaiming the success of these techniques. For instance, Dr. B. M. Mohan, former director of the FSL in Karnataka, argued that these techniques are not only useful but have "revolutionised the causes of crime investigation."[45] Despite refusing to show any statistics Mohan (and Malini, a former coworker) claimed to have a 96 to 97 percent success rate in three hundred to five hundred cases.[46] Vaya pointed to the utility of all three techniques in gaining information in many high-profile cases of murder and poaching, and she received awards for her ostensible successes.[47] Indeed, even former home minister Shivraj Patil said in a 2006 conference on terrorism that "rather than solely depending on oral evidence, I think we must use scientific evidence which is derived using [the] latest technologies [widely reported as referring to narcoanalysis and brain mapping]."[48]

My interview with a senior police official confirmed a widespread belief about the usefulness of truth machines in cracking difficult cases, especially those related to terrorism. Details were not shared publicly, however, because of national security concerns.[49] Growing support for these techniques was also evident in news reports about the CBI's planning to no longer rely on the three existing FSLs but to create a state-of-the-art facility, with the necessary infrastructure, in Delhi.[50] Scholars and practitioners associated with Bangalore's National Institute of Medical Health and Neuro Sciences (NIMHANS), one

of the most prominent Indian research institutes, shared with me their conversations about using narcoanalysis for interrogations. They were skeptical about its use for legal purposes, they said, having considered it appropriate mostly for therapeutic reasons.[51] One doctor in Karnataka, associated with a government hospital where narcoanalysis was conducted, further shared news of meetings and documented plans for expanding forensic psychology through mobile units at the district level.[52]

Forensic psychology thus appeared to become the mainstay of the state forensic architecture, from the central to the local level, to solve criminal cases. Almost all high-profile cases from 2000 to 2010—the Aarushi and Hemraj murder cases, the Telgi stamp case, the Mumbai blast terrorism case, and the Arun Ferreira and alleged Naxalite case—seemed to have involved all three truth machines, and many high court cases contested their constitutionality.[53] Forensic psychologists' efforts also appeared to be gaining traction. For example, in 2004 the forensic psychology division of the Directorate of Forensic Science (DFS) in Gujarat was declared the National Resource Center for Forensic Psychology, and in March 2005 the MHA awarded the DFS, which had taken a lead in establishing forensic psychology in India, 38 lakhs (about 50,000 US dollars) for research, training, and documentation.[54]

A major effort ensued to introduce the police and judiciary to "scientific aids as modes of interrogation" that would parallel the introduction of truth machines to the CFSL and to other state forensic science laboratories.[55] During 2005–2006 alone, 97 judicial officers, 52 investigating officers, and 23 forensic experts participated in the training and reportedly found it impressive. Another set of judicial officers associated with fast-track courts, civil judges, and session court judges—totaling 419 individuals—also underwent training. A memorandum of understanding (MOU) with the Maharashtra FSL was signed, and a new certificate program on forensic psychology with NIMHANS included six months of theory at Bangalore and six months of practical training at the DFS in Gandhinagar. Delegations from the Singapore Ministry of Home Affairs also visited Gujarat to learn about the use of forensic psychology.

From the late 1960s to the early 2000s, therefore, psychologists and forensic scientists transformed the hidden role of forensic psychology as they sought to gain greater visibility and legitimacy in the criminal justice system. As truth machines increasingly became embedded in everyday police practice, however, both the techniques and the practitioners needed the external sanction of the media

and state agencies. To launch more widely, truth machines and the forensic psychologists who claimed expertise using them required the state to establish a forensic architecture. This new system appeared as BEOS and narcoanalysis became increasingly prevalent.

Clash between Science and Forensics: Brain Scanning

The prominence of forensic psychology as well as the most public clash between science and forensics occurred with BFP and BEOS. The clash over these techniques also revealed the high stakes for the MHA in creating the state forensic architecture. The first reported use of BEOS was in 2003 in Gujarat. There, between 2003 and July 2007, BEOS was used in 329 cases, including 167 suspects, 83 accused, and apparently also 12 complainants and 4 witnesses. Cases seem to have come from all over India but mostly from Gujarat (203) and Delhi (61). According to a prominent forensic psychologist, the inadequacy of the polygraph rationalized use of the other two methods.[56]

The origin of BEOS is thus the source of both a critique of the lie detector and close collaboration among the police, forensic laboratories, and the psychology community, together with NIMHANS. Apparently the FSL in Bangalore received its polygraph sometime in 1995 or 1996 but had no one to operate it. A NIMHANS clinical psychologist was then asked to help out. "Then I got . . . their lie detection machines to my lab and started seeing the subjects," he told me."

> Then I found that there was a lot of support, lot of interest from the police department. Only thing what I found is that they'll bring a case then; . . . there will be half a dozen policemen also coming with them, and they all will be standing around inside my lab. . . . My students are doing PhD work, other work, everything will be affected. We were all very tense. *See, people were not friendly with the police as we are today.* . . . So I went and requested my director and other people, we'll shift this lie detection machine to [the] forensic lab itself. And I had trained one of the students with me in using it also.[57]

As this psychologist recounts, the lie detector was first introduced to serve the police, and their needs became the basis for expansion and innovation. He had spent decades studying P-300 brain waves in alcoholics, schizophrenics, and head injury patients and was initially excited about Farwell's BFP (see chap-

ter 3). As he explained, however, the P-300 instrument offered sensitivity but not specificity, so in 1994–1995, with a grant from the Ministry of Information Technology, he introduced BEOS.

The initial phase was extremely time-consuming, he explained, because of a lack of software for computing the results, but eventually a group of "boys from IBM" developed digital analysis software for signal computing of EEG results.[58] Nonetheless, by 2002–2003 the Bangalore FSL had decided to buy the Farwell machine, thereby stopping this psychologist's efforts. He was forced to sign an MOU with Gujarat Forensic Science University (GFSU), the principal laboratory for BEOS, the polygraph, and narcoanalysis. By the time he moved to Gujarat, BEOS was ready. "And we had just set up the model [for BEOS]—okay, the whole model," he recounted. "We knew that was working. We had worked on several cases, and we found that if you can trigger remembrance in a person, that's a different type of activation, which is absent if there's no remembrance."[59]

A more pragmatic reason for inventing an Indian version of BEOS was the high cost of Farwell's machine. Farwell himself had gone to India to demonstrate the technology (in Hyderabad, March 27, 2004), and experts were asked whether the machine actually worked. But it was too expensive, so Indian practitioners turned to BEOS and, ultimately, to two different methods. In Bangalore, Malini used the P-300 method, or BFP, invented by Farwell. In Gandhinagar and Mumbai, Mukundan's BEOS was used. The difference between the two brain-scanning methods was somewhat controversial, although the success of Mukundan's patent application resolved the controversy.

A clinical psychologist associated with BEOS claimed that the polygraph and the P-300 machine were inadequate indicators of deception, leading to several years of research and the creation of BEOS. Yet because of lack of support for the project and threats from the United States questioning the ability of Indians to come up with the technique, patents were difficult to file in India,[60] even though some of the scientific propositions used in developing brain scanning are found in ancient Indian philosophy, or Sankhya theory.[61] Indeed, a clinical psychologist I met sullenly asked whether I had been sent as an informer by the U.S. government. A little more than three years later, after approval of a patent, the same psychologist was euphorically willing to share the success of BEOS. As a research associate working at GFSU explained:

> If the system is sold by some U.S. company, people will start buying it. That is also one of the limitations. It is developed by an Indian. *Indian ne banaaya hai*

> *kuchh theek thaak hi hoga* [If Indians have made it, it may just be ok]. That is also one of the mentality. They don't promote Indian products.[62]

One truth machine was thus linked to national recognition as well as to local innovation for police reform in a postcolonial state.

Yet broader appeal, legitimation, and availability beyond a limited function required MHA-sponsored development, which, together with individual efforts, established the state forensic architecture. Only with such state support could BEOS play a modernizing, transformative role in police practice. In 2007 the MHA set up the D. Nagaraja Committee to look into neuromapping—that is, brain mapping and BEOS.[63] The committee was charged with "technical peer review of the technologies developed and used in forensic interrogation" for the purpose of presenting credible results in court.[64] More visibly supported techniques, the committee reasoned, might strengthen and legitimize the state forensic architecture (though not termed as such). The Nagaraja Committee conducted the most public government-sanctioned review. Besides an overview of peer-reviewed publications, committee members heard presentations from companies promoting the two methods (including Axxonet, headed by C. R. Mukundan and his son Chetan Mukundan) and presentations about their use in FSLs.[65]

In its scathing report, the committee found no peer-reviewed evidence showing effectiveness of these techniques:

> Review of the brain electrophysiology based techniques (brain mapping used in FSL Bangalore and BEOS used in FSL Gandhinagar) suggests [a] sub-optimal scientific basis for them to be used as evidence in [a] court of law. Hence they cannot be used as evidence in the court of law.[66]

The Nagaraja Committee did recommend further research but was critical of brain scanning (with a critique that coincides with some of those noted in chapter 3). Without much explanation, however, the MHA chief forensic scientist dissolved the Nagaraja committee, though not before the chair managed to leak the formal report to the media.

Given the report's damning conclusions, the clash was perhaps unsurprising, but the MHA chief scientist's memo dissolving the committee, written in October 2008, reveals the prominence of forensic psychologists and the state's investment in a forensic architecture.[67] The memo associated Mukundan with

BEOS while he was affiliated with the FSL in Bangalore, Karnataka, where the ministry had initially funded his project. Mukundan eventually left that job and joined the DFS, Gujarat, and continued the work after the DFS signed an MOU with NIMHANS.[68] As the memo notes, "As per the MoU terms and conditions, Dr. D Nagaraja and NIMHANS, Bangalore were actively involved in starting the Brain Electrical Oscillation Signature (BEOS) profiling facilities at DFS Gandhi Nagar."[69]

The minimal valence for Farwell's P-300 technique in crime investigation thus led to further research and to the development of BEOS. My respondents also suggested that NIMHANS was involved in its early stages but withdrew from formal MOUs because, as a premier academic institution, it wanted to avoid legal responsibility for the application of either brain scanning or narco-analysis.[70] By then the Bangalore laboratory had also bought the Farwell instrument. Although Mukundan's reasons for relocation differ in various accounts, with this move the Gujarat FSL did become the principal center for all three truth machines.

In his memo dissolving the Nagaraja Committee, the MHA chief forensic scientist also repeatedly mentions the high demands of brain scanning. To assess the situation, he had held a meeting with forensic scientists affiliated with the CBI, CFSL, Chandigarh, and FSLs in Gujarat and Maharashtra.[71] The memo notes reasons for dissolving the committee: lack of committee members' visits to laboratories in Gujarat, Maharashtra, and Karnataka, where truth machines were in use; committee members' "incompetence" in deciphering the results; flawed methodology in assessment; and refusal to acknowledge that lack of peer review was linked to patent application. Because Nagaraja had been previously involved in the research on BEOS and was affiliated with NIMHANS, with which the forensic laboratories had initially signed an MOU, the memo also suggests conflicts over patent ownership.

But the two principal arguments against the committee's report were, first, that the state and central investigating agencies were "highly satisfied with the findings of FSL, Gujarat and Mumbai in a number of cases." As the report continues, "A number of courts in Maharashtra and in other states have strongly supported the BEOS findings in their judgments."[72] The second argument was that a study, with one hundred volunteers in Gujarat's FSL, to test the findings and ascertain experiential knowledge showed positive, encouraging results.

Singapore's government committee also found the results satisfying. The memo thus concluded:

> This Directorate doesn't agree with the findings [of the Nagaraja Committee]. The FSLs of Gujarat, Karnataka and Maharashtra are doing good work in helping the law enforcement agencies and courts with their available tools and their roles cannot be underestimated. The courts of Law are there to evaluate the scientific findings of the forensic laboratories on BEOS/Brain Mapping Technologies.[73]

Thus, in a remarkable move, the recommendations of a committee established by the state and joined by some of India's most prominent scientists, some from the highly reputed NIMHANS, were not only disregarded but also delegitimized. Unaddressed as well was the committee's fundamental question about the absence of peer-reviewed publications, as mentioned by critics.[74] With a lack of independently verifiable studies—a hallmark of brain scanning (and, indeed, the other truth machines)—involvement of the FSLs in the decision to dissolve the committee suggests their strong influence in determining the future of these techniques. The public clash between science and forensics appeared to be resolved in favor of forensic psychologists, reflecting the faith of the police and, by extension, the legal system in these experts and their methods.

The two methods of brain scanning in India are thus BEOS and Farwell's BFP, sometimes marketed by Brainwave Science (though not by Farwell, as chapter 3 explains). BEOS is used in Gandhinagar, Gujarat, and Mumbai, Maharashtra; whether other states and the CBI have also acquired these machines remains unclear.[75] BEOS continues to be used much more visibly than lie detectors and narcoanalysis, with hope for admissibility of its evidence, despite the 2010 Supreme Court judgment rendering such evidence inadmissible. One reason for the prospect of admissible evidence is that, unlike the polygraph and narcoanalysis, probes with this technique are questions to which no answer need be given, thereby providing only memory rather than spoken words. Hence the technique may be deemed non-invasive and less a concern for constitutional protections. Furthermore, unlike the polygraph and narcoanalysis, which have long and controversial histories, BEOS appears to be distinct.

The Farwell method is used at Raksha Sakhti University in Gandhinagar,

Gujarat, apparently thanks to either a marketing gift or an MOU with the university.[76] Despite the MHA's claim that the technique may not require validation, attempts to validate it are ongoing. Its success in solving cases, rather than peer review, however, is the basis for claiming validity and reliability. One effort, for example, is to solve about thirty of CBI's old cases with Farwell's technique.[77] Forensic psychologists thus continue to play a key role in determining the future of the truth machines in India. With the Nagaraja Committee, public attempts to legitimate the state forensic architecture apparently failed, but the introduction and medicalized use of truth machines continued unabated.

Narcoanalysis and the State Forensic Architecture

The art of questioning associated with narcoanalysis emphasized the role of forensic psychologists in India. Truth machines no longer remained the province of individual practitioners or laboratories working with the police but also appeared in MHA reports as a planning priority for the state. Forensic psychologists' initiatives merged with the postcolonial state's development plan and a "techno-political solution" to address the ills of policing and the criminal justice system. According to a report on Gujarat, narcoanalysis was first conducted in 1989 in a case of official secrets, then in a theft case in 1990 and a murder case in 1999.[78] One of the field's pioneers explained to me the impetus behind the early use of this technique, together with the polygraph and BEOS, as a "need-based requirement. In cases where there is a dead end—there is no way out for the investigators and with court permissions—the methods were actually used."[79] In private practice, drugs were already used for therapeutic purposes and termed "abreaction therapy." Some police were also using drugs illegally. As my respondent elaborated, "The effort was to make it more ethical, because it was an accountable way, a legal way of doing it."[80]

The presence of medical personnel in prison enabled some of the first test cases. Gradually, however, the team included a psychologist, a psychiatrist, and an anesthetist. By 2003 an explicit proposal appeared in the *CBI Bulletin*, suggesting narcoanalysis as a humane approach to interrogation.[81] Cases of narcoanalysis spiked suddenly, to 38 in 2005, then to 88 in 2006, and to 72 in July 2007. From 2002 to July 2007, 213 cases involving narcoanalysis included 28 accused, 79 suspects, and 1 witness. Eighty-three cases were from Gujarat, 32 from Delhi, and 97 from elsewhere. The report mentions about 99 subjects undergoing narcoanalysis in Gandhinagar, Gujarat.[82] In 2013 I visited an operation

theater for minor procedures in Gandhinagar, where narcoanalysis continues to be used. In 2010 the setting saw 51 cases and in 2011 55 cases, with 56 in 2012 and 70 in 2013. Most of these occurred after the Supreme Court decision on these three techniques in 2010,[83] and the tests continued in 2017: a report in July 2017 notes, "Directorate of Forensic Sciences (DFS) in Gandhinagar has performed 42 narco-analysis tests in the first six months of 2017 against the annual average of 60 tests."[84]

The FSL in Gandhinagar was aware of the potential legal issues for an invasive procedure, so consent was taken from subjects, and for those accused it was recorded in front of a magistrate (as per the 1999 NHRC guidelines and after the 2010 Supreme Court decision). Indeed, one pioneer in the field claimed that courts and forensic psychologists preferred suspects coming from judicial custody rather than police remand. Notably, although deaths do occur in judicial custody, police remand is synonymous with torture.[85] One forensic psychologist acknowledged that police often tried to delay the process to complete the investigation but that she preferred suspects from judicial custody because "physical and mental fitness was difficult to ascertain [in police custody] and to be safe, suspects came from the judicial custody." This procedure was also a way to avoid later legal battles and ensure a more open process.[86]

Attempts to legitimize truth machines as a part of the state forensic architecture exceeded both individual efforts and local development initiatives through MOUs, university courses for forensic psychology, and government hospitals' expansion of mobile units. In 2005 even the DFS distributed a laboratory manual for using narcoanalysis,[87] and an attempted explanatory note to Section 53 of the Criminal Procedure Code would have allowed truth machines in medical examinations.[88] The biggest shift, however, was the excitement regarding narcoanalysis expressed in MHA reports from 2008 to 2014. Although the technique had been mentioned in earlier reports, it now appeared, along with community policing, as one of the National Police micromissions for infrastructure development.[89]

The 2008–2013 reports also mentioned BFP as an area in which the CFSL would direct future growth, and the 2011–2013 reports specifically mentioned Chennai and Kolkata as scientific aid units for the CFSL. Despite controversies, especially over narcoanalysis, these techniques appeared important to the CFSL expansion plans. The 2013–2014 Ministry of Human Affairs report, for example, proudly acknowledges the success of the lie detection division both for the CBI, in Delhi, and for other states:

> The division has initiated [an] action programme for induction of the state-of-the-art technology for analysis of information present in the brain X of the subject and is making efforts to open (1) Narco Analysis (2) Brain Mapping (3) Computerised Polygraph System (3 units) and (4) Voice Stress Analysis (VSA) facilities. These installations will be helpful in the investigation of crime.[90]

Despite the legal and scientific questions apparent by that time even in the Indian context, enthusiasm for these techniques continued at the highest echelons of the government.

In some ways the MHA report attempts what Timothy Mitchell elsewhere terms "objectivation," here by collecting information, making it public, and marking these techniques as priorities.[91] Lie detectors receive the most systematic calculation; according to the MHA report, "Since 1973 to-date, examination of approximately 11,500+ subjects have been conducted for detection of psycho-physiological deception," but here the polygraph stands for the possible calculability of all techniques.[92] The project report from Gujarat also tries to capture the expanded use of truth machines at GFSU and the Gandhinagar FSL.[93] What existed in the shadow of law, with mention disaggregated, became a state priority for policing. While these techniques are not the exclusive focus in forensic science, their sheer persistence, despite their lack of credibility, is noteworthy.

Attempts to consolidate the state forensic architecture seemed to persist against all odds. In its reports, India's postcolonial state had recognized problems with torture and third-degree interrogation and had recognized truth machines as a scientific way to resolve these problems (see chapter 2). Forensic psychologists seemed to have police support for their use of truth machines. In addition, the psychologists were now poised to be the foundation for a forensic architecture that had state support to permeate to the lowest levels of police administration and a forensic science university with a curriculum to train practitioners who could fulfill some of these needs.

Rise, Fall, and Resurrection of Forensic Psychology

The 2010 Supreme Court decision in the *Selvi* case (discussed further in chapter 5) mediated the development of India's forensic architecture by ruling out the involuntary use of truth machines and rendering evidence inadmissible. As with the 1963 *Townsend* decision in the United States, however, the Court did not rule on the coerciveness of the techniques.[94] Expecting the euphoria over

these techniques to die down, some of my respondents, together with other commentators, felt that use of narcoanalysis would diminish. Courts had been important to establishing the state forensic architecture, especially as most high courts, where these techniques had been challenged, had preferred them to third-degree interrogation.

Some of the fissures in the state forensic architecture were revealed after *Selvi*, but the state, together with individual and commercial interests, has mostly repaired the cracks.[95] Forensic psychologists reclaimed their place, as indicated by the number of narcoanalysis cases mentioned since 2010. Indeed, the Delhi High Court's insistence in January 2019 that a narco test machine be made operational within three months in the Delhi FSL indicated the continued significance of narcoanalysis.[96] One prominent strategy for gaining visibility and legitimacy was the claim to replace physical torture with truth machines. In defining the forensic psychology division, for example, Vaya, stated:

> It has been the aim of this division to promote the use of scientific methods on [a] regular basis in all investigations so that it enhances the credibility of police investigations. This automatically discourages the use of third degree in police interrogation[,] which helps in maintaining the dignity of the suspects and preserve[s] their rights.[97]

Stated purposes for expanding the use of truth machines were not only to aid the police scientifically in investigations but also to help the judiciary decide cases when forensic psychologists gave corroborative evidence.[98] The narrative of replacing third-degree interrogation was, of course, difficult to sustain, as it was used in very few cases. Furthermore, many critics considered narcoanalysis a form of psychological torture, and at least in terrorism-related cases, truth machines were used alongside the physical third degree.[99] Nonetheless, one of the principal elements of legitimation from the 1960s to the 2000s was that truth machines, including BEOS, would help replace torture and third-degree interrogation. As a research associate explained, "Why [do] we need to beat up the person? Because that is not giving you any further information in terms of brain activity."[100] I asked whether the police tend to avoid using the third degree, and she replied, "Usually for high-profile cases they don't go for third degree, but if it is [a] normal person, then they go for such things." I pushed her to explain the distinction, and she said:

> Usually police officers don't opt for third degree. They're not inhuman in nature, but sometimes they get orders to do such things. Even they share that "we don't enjoy giving third degree. We try to avoid it as much as possible." But in some cases when they're not getting anything, when they think that, they see that the person is very resistant, they go for it. But they also agree that if we have this type of technology, then we'll think about it. Next time we'll not go for third degree.[101]

Critics, however, maintained that only sustained interrogation, not truth machines and not third-degree, was effective.[102] P. Chandrasekharan, an award-winning forensic scientist, was critical of the 2010 Supreme Court decision that authorized these techniques with the consent of the accused. He opposed the arguments by Ashwani Kumar, then CBI director, who argued that the Indian Parliament should sanction the polygraph and brain scanning. "We have to find the truth," Kumar asserted. He went on to say:

> It is high time the Parliament, public and press took it up. Because it is Parliament which has to make the law. The Supreme Court has interpreted vis-à-vis the existing constitutional provision. I respect the judgment but I would like to differ with regard to polygraph and brain mapping. I completely agree with the view on narcoanalysis.[103]

For Chandrasekharan, however, the critique was not restricted to narcoanalysis. "Forensic Science never owned the polygraph," he lamented,

> or the recent science-fictional brain fingerprinting as scientific tests belonging to their armour. Polygraph has always been the tool of the criminal investigator rather than the forensic scientist even before it came to disrepute. Its functions have been handled world over by people trained in the techniques of criminal investigation and interrogation and not by forensic scientist[s].[104]

Indeed, the peculiar combination of truth machines and forensic psychologists appears to be an Indian innovation. A forensic scientist, famous for his role in former prime minister Rajiv Gandhi's assassination case, called these techniques a kind of Potemkin science or the equivalent of an octopus squad—that is, asking an octopus to predict which football team would win.[105] Those

associated with BEOS were less enthusiastic about narcoanalysis, claiming that requests for truth serum are only tactics to delay cases (though the continued demand for narcoanalysis belies that assertion to some extent).

Despite the contestation, the state forensic architecture remained part of state planning. Along with MHA reports citing truth machines as strategic policing, the plan for the future of forensics, shared with the MHA in July 2010, notes their ongoing use:

> Similarly, the practice of polygraph, brainmapping and narcoanalysis should be in the purview of forensic medicine [FM] set up since these techniques involve different extents [of] invasiveness and warrant the availability of medical attendance. It is to be noted here that a judgement pronounced on May 05, 2010 by the Supreme Court of India stipulates conducting of such tests only after the subject's informed/voluntary consent; there is[,] however[,] no ban[,] which means that the administration of tests can continue. . . . Therefore these three facilities of the Central/State FSLs should be relocated in phased manner, and made available at FM set up.[106]

To ensure safety and medical supervision, state forensic experts have called for the incorporation of all truth machines within forensic medicine, as with narcoanalysis, but these proposals raise questions about the relationship of the drugs to the other techniques. Ongoing use of narcoanalysis in Gujarat, followed by suggestions for other narcoanalysis test facilities, thus fits the planning for the state forensic architecture.

The state's inability to reject truth machines is also evident in the legal case regarding forensic psychologist Malini, who worked at the FSL in Bangalore and was criticized for her aggressive use of these techniques. Controversy regarding her credentials and some false certificates led to her dismissal, although she had to be legally reinstated because of a faulty process. She also faced allegations that she had sold narcoanalysis recordings to the media, had often beaten up suspects during interrogations, and was not actually trained as a forensic psychologist.[107] When I visited the Bangalore FSL in 2014, the laboratory had no functioning forensic psychology division, even though Malini had been recently reinstated.

Malini and the director, B. M. Mohan, were the most vociferous defenders of truth machines and claimed a high percentage of accurate results. Most of the

recordings regarding narcoanalysis that had been leaked to the media—among them videos of Abdul Karim Telgi, Krishna Thadarai (in the *Aarushi-Hemraj* case), and Sister Sefi (in the *Sister Abhaya* case)—involved their laboratory.[108] After the Supreme Court *Selvi* case, therefore, other forensic psychologists claimed that Malini's aggressiveness had delegitimized their techniques. Initially, however, Malini was much sought after, and even suspects who had undergone nacroanalysis elsewhere, including Arun Ferreira, who had been tested in Mumbai, were taken to her in Bangalore for examination.[109]

The contrast between Malini's critics and the Karnataka High Court, which reaffirmed her qualifications, is evidence of the continuing legitimacy of truth machines.[110] The court noted that Malini had master's and PhD degrees in psychology, had greatly contributed to solving crimes, and had been the target of political pressure to remove her from her position without due process. The court spent several paragraphs recounting her awards from the MHA, the police in Hyderabad and Bangalore, and the Karnataka government:

> The fact that she was in service as [a] contract employee for a period of 7 years continuously and during that period she was involved in [a] number of sensitive cases, her hard work and ability was appreciated by various authorities is not in dispute. In fact, she is a National Award winner and renowned researcher, specialized in conducting Narco Analysis and Brain Mapping tests for various under-trials, suspects involved in sensational cases from across the country.[111]

Testimonies of terror suspects, however, mention physical torture associated with Malini's use of narcoanalysis (see chapter 6), and videos related to the *Aarushi* case show her slapping suspects. Yet the court accepted her contributions in these cases, even though much of that narco-induced evidence was suspect.[112] As with the MHA's rejection of the Nagaraja report, the court directly or indirectly reaffirmed the expertise and influence of forensic psychologists in the use of the truth machines.

While the state continued its efforts, companies such as Axxonet aggressively promoted BEOS machines. Axxonet's website, for instance, asserts the following:

> Unlike other technologies which have been used in 2 or 3 cases, NSS has been used in over **700 cases** reported by independent Forensic laboratories in areas

> such as Murders, Insurgency, Poaching, Illegal immigration to name a few. . . . Unfortunately the court confused BEAP/BEOS with the outdated and minimalistic P300 technique with which BEOS has no connection.[113]

The Supreme Court's inability to distinguish among methods of brain scanning, this marketing claims, is responsible for the delayed recognition of BEOS's advantages.[114] Facilities vie for attention to their version of brain scanning, and laboratories and institutes associated with either BEOS or BFP continually provide evidence of their success.[115] State and commercial interests are linked to both techniques.

High costs are associated with all techniques. BEOS and BFP machines are backed by strong commercial interests, but polygraphs and narcoanalysis, too, cost money.[116] For instance, a news article in 2009 cited a cost of 30,000 rupees (U.S.$435) (an increase of 20,000, or U.S.$290) to conduct narcoanalysis for agencies outside the state of Gujarat and 50,000 (U.S.$725) for expedited services.[117] As the chief home secretary of Gujarat explained, "The decision to increase the fees for psychological tests was taken considering appreciation in [the] cost of various things, including the salaries of DFS staffers and modern equipment needed for its laboratories."[118]

Occasional media stories appear about understaffing in the Mumbai laboratory. In a murder case where narcoanalysis was allowed, the media reported that the "Forensic Sciences Laboratory in Kalina employs experts and technicians on a contract, which expired in April and is yet to be renewed."[119] One story even reported a BEOS machine lying unused in the Chandigarh FSL, and in January 2019 the Delhi High Court expressed surprise that the Delhi FSL lacked a narcoanalysis machine, requiring that suspects be taken to the Gujarat FSL, and asked that a test machine be made operational within three months.[120] The apparent result was the installation of the BFP machine in the Delhi FSL.[121] The concern is thus an inability to meet demand. Meanwhile, the clash among forensic experts, the scientific community, and human rights activists is all but forgotten in a quest for technical fixes to the criminal justice system.

Just as the NHRC had suggested in 1999 that a medical review ensure safety in the use of truth machines, recommendations to move these techniques into the realm of forensic medicine appears to be the answer to any critics. While the science of these techniques has been the subject of much dispute, elaborate efforts have sought to insert forensic psychologists into the state forensic archi-

tecture. The question, then, is why forensic psychologists, as opposed to other forensic scientists, have been so readily embraced by the police and then have become so integral to the forensic architecture of the Indian state.

FORENSIC PSYCHOLOGISTS IN INDIA'S FORENSIC ARCHITECTURE

> You have to understand that irrespective of what a subject has done, we empathise with him. To judge someone is not our job. We leave it to the courts. As a psychologist, we journey with the suspect as he narrates his tale. There are times when we have felt that had we been in a similar circumstance, in which the subject found himself to be, we too would have done the same thing. —Dr. S. L. Vaya, "Meet the Woman Who Bonds with Hardened Criminals")

As experts, forensic psychologists became central to India's forensic architecture. With their machines and drugs, they plied their trade in laboratories, serving police reform with resource expansion, changes in legal procedures, and media support. Their contingent efforts thus applied the material resources to assist the bureaucratic agents of state power. The state forensic architecture came to rely, to a large extent, on forensic psychologists' abilities to define their role, their spatial location, and their unique relationship to truth machines. Just as Mulla's forensic nurses are central to the collection of evidence in cases of rape, forensic psychologists saw themselves as indispensable to finding evidence—whether confessions, information, or aids for investigation—in unsolved crimes, and they tried to convince others to rely on them.

Forensic psychologists, in turn, relied on machines like polygraphs or EEGs and on drugs to detect lies or to tap memories and obtain information. Yet beyond interpreting evidence, as other forensic experts do, they functioned almost as extensions of the machines—in effect, like cyborgs.[122] The January 2019 demand of the Delhi High Court for a "Narco Test Machine" captures this merging of machine and expert.[123] More than other forensic scientists, however, forensic psychologists were often conscious that their work was considered subjective.[124] Therefore, they highlighted their role by distinguishing themselves from police—spatially, professionally, and therapeutically—and sought to supersede the innovators responsible for machine-driven processes, bypassing the

need to verify the machine's reliability and validity. The forensic psychologist's skill thus merged with the machine as the expert oscillated between professional autonomy and machine-derived expertise.

Distinction from the Police

Forensic psychologists are highly invested in distinguishing themselves from the police. Their laboratories, for example, are separated from police stations. The forensic laboratories I visited presented the type of hustle-bustle that is common to any bureaucratic office. Gaining entrance to the main building was straightforward, although formal access was required for observing the machines. In one laboratory, I witnessed a woman and her daughter (suspected in a domestic violence case) subjected to a layered voice analysis test in an extremely crowded space.[125] Other tests were conducted in more formal testing rooms.

Both psychologists and psychiatrists claim expertise distinct from the police. As one forensic psychologist said, "Psychologists, medical health professionals should be able to do it [conduct tests] since they understand nuances of [the] mind, the aspects of volition, cognition, and feeling at all levels."[126] Given the importance of the suspect's safety and security, this practitioner elaborated, the police, located at a police station, might be unable to handle the "psychotic breakdown" that a truth machine could trigger. Mental health professionals, in contrast, routinely deal with guilt, sadness, deception, and psychotic breakdown.

Even a drug or alcohol is administered differently in a forensic setting. In police settings, alcohol is a popular means of lifting inhibitions, promoting a desire to "let it all out" in order to avoid physical and mental discomfort. Alcohol may even be a face-saving device, rendering the individual unconscious of the speech act later on. One forensic psychiatrist I spoke with distinguished alcohol used in a police station and a drug administered in a medical setting:

> See, the reason, the difference between alcohol and Pentothal—alcohol you cannot make person to drink. That is [the] first part. Second part, you cannot control the intoxication phase, like we do not know . . . whether the person is going into [a] trance with 1 peg, 1.5 peg, or 3 pegs. So the beauty of this medicine is [that] you can control. In alcohol you can't.[127]

Only a medically trained professional, therefore, can use a drug efficiently. Narcoanalysis has been used illegally on terrorism suspects (see chapter 6), and

private doctors have administered drugs in police stations (see chapter 2). For forensic psychologists and psychiatrists, however, the extralegal techniques used by police undermine the legitimacy of their work.

Identifying with their subjects through empathy and association is also crucial in the forensic psychologists' efforts to establish guilt and, in turn, further distinguishes them from the police. As a prominent forensic psychologist explained:

> While torture is an external stimuli [*sic*], these techniques are internal ones and invite an internal journey. They force you to review your past in a different way, not confess, but ask them to think about their selves and come back. It is a moment of catharsis in the legal system. Unlike the police custody, where there is fear of encounter or custodial death or torture, here there is empathy. There are no doubts about the methods, and [the] system can reach truth regardless of the consequences.[128]

While speaking of the confessions in a particularly horrific case of multiple murders, one clinical psychologist noted that when the murderer (who was subsequently executed) cried and confessed in the BEOS laboratory, he felt guilty:

> CLINICAL PSYCHOLOGIST: I only think that he's a patient. First of all he's a patient.
> JINEE LOKANEETA: He's a—?
> CP: Mental patient.
> JL: Mental patient?
> CP: Otherwise he will not do something like this. But then that testing was done because he's admitting that he has done.[129]

The guilt is accompanied by an attempt to avoid traumatic probes, as the clinical psychologist elaborated:

> No traumatic probe should be presented, not a single word which can traumatize. Everything has to be presented in a nontraumatic way, because you know that you're not going to use this as evidence in the court. What you want to know is that . . . was he interacting with this person? These are the things that

> you want to know. And he says he was not there at all. So if you know that he was there, he was interacting with this person, that itself becomes sufficient . . . to convince him; see, the test is showing like, "This, you were there." And later you can interrogate him using that.[130]

Trauma must thus be avoided because a practitioner could empathize with a suspect, even while obtaining information. In an interview highlighting her award, Vaya notes, "There are times when we have felt that had we been in a similar circumstance, in which the subject found himself to be, we too would have done the same thing."[131]

The gender typing of forensic psychology also separates these professionals from the police. Forensic psychology, like forensic nursing, is a feminized occupation,[132] and many prominent forensic psychologists have been women. In reference to fingerprinting, Simon Cole notes that historically "95 percent of the 115 identification clerks employed by the [U.S.] Navy were female."[133] Rationales for gender typing include claims that women have "better aptitude" and "attention to detail," but Cole suggests that the predominance of women is instead linked to the "feminization of clerical work" in the early 1900s United States and to women having been restricted to marginalized professions more generally.

A female research associate mentioned to me that the reasons for women's predominance in psychology in India is a common question. "It may be because they're more patient in nature," she speculated, going on to say:

> They have better listening skill[s] because [the] forensic psychology part comes later. It starts with general psychology. When you're interacting with a person, how you're interacting, how you're getting information, women are more reliable, more credible as compared to men. So even [with] phone calls by some company is being "Ah . . . the person is female." So if a female is giving you a call, you will rely more on her.[134]

Occupational credentials, however, need not offer professional autonomy. Women forensic psychologists have written almost all articles on truth machines in CBI bulletins and police journals, but these are almost always coauthored with a male director or forensic scientist.[135] And the assumption that

women naturally lie was the basis for disbelieving their accounts of rape and turning to the lie detector for evidence (see chapter 3). The police and the courts, in comparison, are male dominated, suggesting a contrast between presumably patient forensic psychologists and more aggressive law enforcement. Elaborating on the virtues of their patience, one forensic psychologist said:

> When you're interacting with police officer[s], you cannot be aggressive in nature. You have to keep your patience. You have to keep your mind calm. And police officers, their profession is such that they're more towards aggression, or they have to behave in that manner; otherwise, people will not listen to them. If, as a forensic psychologist, I start behaving aggressively, I cannot control another person. He will not cooperate with me. I don't want that.[136]

This forensic psychologist sought to establish rapport with suspects:

> There are many reasons, not for therapeutic purpose but when a person is coming, irrespective of whether he's innocent or guilty person, he's anxious. So in order to calm him down, in order to make him more cooperative, you have to be [a] little therapeutic in nature. So it is more like rapport formation and not giving proper therapy to the person. So in order to win his trust, you have to move in that direction; otherwise, he'll not respond; he'll not cooperate. And if you don't get consent, you cannot go for investigation.[137]

Lack of patience among police, this practitioner believed, was a crucial reason for their inability to create rapport with suspects. As Vaya similarly explained, "They [police] usually don't have the patience to make use of the techniques because they are under several kinds of pressure, including fast resolution of a case."[138]

The forensic psychologists I met considered themselves so separate from the police that their conversations focused on differences explaining the dilemma between forensic and clinical psychology. The latter, several respondents told me, is often a voluntary relationship. The forensic psychologist, in contrast, is part of the state forensic architecture. Clinical psychologists can promote "unconditional trust for healing the wound," one forensic psychologist noted; "here the wound that is suppressed may be scratched and may affect the person."[139] The process of obtaining a confession further requires a continuous interview

until the information is extracted and committed to paper with a signature (although a suspect can retract the confession). The catch for the forensic psychologist, however, is "But once if you read it to me, I have heard, my opinion can reflect what we talked about. While the intent is not to harm you but I have to report what we talked about."[140]

Thus, all truth machines are deployed to obtain information or confessions, whether directly or indirectly. The purpose of BEOS, BFP, and the polygraph, therefore, is not to detect deception. Even if the technique fails to provide information during the test, the pretest and posttest interviews extract confessions or information. With BEOS, pretest interviews are used to create questions for probes and then for confessions. As a clinical psychologist explained:

> And that's how you find that, even when you ask them, they tell you that, after [the] BEOS test[,] when they present the findings to the subject, so many of them confess straightaway. That self-confession is very large[,] this thing in BEOS. People confess.[141]

As the director of a major forensic lab (not a forensic psychologist) summarized for me, "Whenever they [police] can't use torture, they bring them here for confessions."[142] That is the ultimate motivation for the use of truth machines.

Experience over Validity

If the goal in the forensic setting is confession or information, then juridical truth in courtrooms, or even scientific validity, as explored by the Nagaraja Committee, is not that crucial. Regarding BEOS, one forensic scientist explained validity this way: "The findings in cases have actually proven its validity on its own. You don't need a validation test. It is irrelevant today. More than me, those people [the forensic psychologists] are certain that they can solve a case."[143] Forensic psychologists offer reliance on the truth machines based on experience in thousands of cases. Innovation and proof thus lie deep within the state forensic architecture. The experience of forensic psychologists and the necessity of information thus trump all else, a claim clearly upheld by the state's response to the Nagaraja Committee as well as the decision to continue using truth machines under the aegis of forensic medicine. As one forensic psychologist said, "It helped so from [a] victim point of view. . . . Anything that may help in investigation has to be tried."[144] A forensic psychiatrist made the same

point even more strongly: "[Solving] burglary is not going to help [the] nation, but if [a] terrorist is there, it is definitely going to help [the] nation. The worst scenario [is] we can't help, but even if [there is] one one-thousandth of a percent chance that we may get some information that can be helpful, so that was probably the reason that it was started."[145]

Distinguishing themselves from the coercive police—spatially, professionally, and therapeutically—forensic psychologists tout their experience as a mode of legitimation. Unlike police interrogators, however, they feel committed to "make the person accept from within."[146] They see their work as a therapeutic process that helps the patient "work out inner responses of his actions," and they attempt to show empathy and not "leave them wounded." Despite the enormity of some crimes, the forensic psychologist has to "understand with compassion," "without judgment" (until later), and without any conception of "right or wrong." Indeed, one forensic psychologist insisted to me that the "questions are almost like the inner voice." Elaborating, she said, "You cannot pretend, because they will know, and then they will not connect without conscious inhibitions." The process, she averred, is not about gaining answers but about "relief of the patient" so that his "burdens would be relieved" and his health unaffected.[147] The forensic psychologist posits herself as both working for the state and the patient.

Relationship to Machines

Beyond exhibiting empathy with those who have committed horrendous crimes, forensic psychologists mediate suspects' relationships with the truth machines. As the history of the lie detector indicates, the machines can evoke fear.[148] When brain-scanning electrodes are attached or a drug injected, the result is often additional anxiety beyond concern over the test, a problem that has been raised in court (see chapter 5). In response, the forensic psychologist, as a medical professional, ensures that the procedure is safe and spends much effort trying to counter the ostensibly "irrational fear" of being attached to an electrode cap or drugged and emphasize the objective nature of the process.

An early twentieth-century debate on the validity of fingerprinting and anthropometry (the art of observation considered science) offers a parallel. Fingerprinting developed more valence as a technical procedure—"a mechanical quality"—than human observation. Cole writes, "In short, fingerprinting seemed like part and parcel of the new, rationalized bureaucracies, scientific management, . . . and methodization of government."[149] Similarly, emphasizing

polygraph reports or BEOS/BFP results deemphasizes the subjective aspect of these techniques. The exception, of course, is narcoanalysis, which emphasizes narratives. Nonetheless, discourse about all truth machines promotes their relationship to science, and when compared to the police, they do indeed *appear* less arbitrary and a more modern mode of investigation.

The relation between the machines and the forensic psychologists also lies in the innovation initiated by those who actually use these techniques in the labs. For instance, BEOS-related scientists emphasized that if lack of participation in the crime (experiential knowledge, or EK) appeared more than once, they repeated the tests. One research associate told me the following:

> If the suspect is innocent and on his version he's showing [a] lot of EK, that means whatever [the] suspect is telling, you can go with that and not on [the] IO's [investigative officer's] version. On [the] IO's version he's not showing any EK. On his own version he's showing EK. That means he's towards innocence. Whatever he is telling you about the crime scene is true, correct.[150]

If there is experiential knowledge, on the basis of the inventor's suggestion, the process is repeated to ensure that the suspect actually has knowledge of the crime. Repetition presumably promotes reliability and assurance in the test's objective, scientific underpinnings.

Technicians and forensic psychologists, however, initiated a shift in this practice after finding that constant repetition of the tests, even after a slight indication of experiential knowledge, changed the results not confirmed them. As one clinical psychologist explained:

> So today, even if one probe shows EK, they will test him again [the] next day with another set of formulation. And suppose, then, also they get only one EK; then again they will test him. And you'll be shocked to see that; even I'm shocked; the third day or the third time they test, they get fifteen, twenty probes showing EK, because that was the right formulation. Because the police came and said that this is the way it would have happened, even they thought this is the way it happened. The way it really happened was different. You present that, but for that you have to do a lot of your own brain work. Not that everywhere you may succeed, but this is when they get so many EKs, they tell the investigator, "See, this is the way it happened. Now, you go, investigate." They

> go to another location, another place, investigate, and in two days' time they get a phone call saying *saab* (sir), case solve *ho gaya* (case is solved); we got all the evidences.[151]

The inventor was apparently impressed with the forensic psychologists. As my respondent elaborated, "I mean, the other day she was telling '*hum ek mahine ke baad test kiya, wohi finding*'" (we repeated the test after a month and found the same result).[152] The relationship between machines and forensic psychologists thus lies not only in science but also in laboratory innovation, with almost the merging of forensic psychologists and truth machines—the emergence of cyborgs—exceeding the understanding of the machines' originators.[153] The application of the machines, therefore, with forensic psychologists as cyborgs, reveals practices that strengthen their presumed validity.

WHY TRUTH CLAIMS FAIL

The problem with building a state forensic architecture on the work of cyborgs is that even a new regime that ostensibly replaced torture and third-degree interrogation continued to rely on methods of obtaining confessions and information. Here confessions are no longer extracted during police detention but instead are sought in forensic laboratories or hospitals through the misnomer of "scientific interrogations." As Peter Brooks famously explained in *Troubling Confessions*, a confession may be due to a desire to share some guilt about anything with an authority figure—priest, psychologist, therapist, or police officer—and may be true for some wrongdoing but not for the act under investigation.[154] Such confessions are often unreliable, involuntary (volition being an important legal norm), or even false. In this case, the use of machines and drugs by medico-legal experts overdetermine the process of inducing confessions even more.

The inability to dispense with truth machines, despite a constant critique and the availability of other forensic methods, suggests the same logic that propped up physical torture. The scientific techniques that informed investigations when they remained in the shadows became official, but with recovery still the basis for confirming a suspect's account, the need for confirmation led to a continual search for methods to detect lies and discern truths. The transformation of forensic psychologists from hidden to intermediate to visible, then,

rendered them central to contemporary Indian policing and the state forensic architecture.

Through narratives and documents, forensic psychologists became the harbingers of truth. Reported documents never represent the entire sequence of pretest, test, posttest, or test repetition, despite meticulous records and CDs recording interrogations. A thick case file shared with me in one FSL with strict instructions not to reproduce any part of it clearly indicated what emerges from a paper record. The expert's report folds out any creases, contradictions, and elements of interpretation.[155] The forensic psychologist's report was often the sole document representing the forensic truth whether formally presented as evidence or not. The Delhi FSL's adoption of BFP in response to the Delhi High Court's recommendation for a narco test machine also reveals that even when some methods are delegitimized, the state forensic architecture remains ready to embrace new truth machines. The criteria for their adoption is that they resemble the truth machines such as the newer suspect detection systems or voice layered analysis, which above all provide a prominent role for forensic psychologists desiring confessions or information through a combination of art and machines.[156]

CONCLUSION

Tracing the state forensic architecture that enabled scientific interrogation reveals that state acts are not as intentional as theories of the state and policing claim but are instead contingent on the initiatives of semi-state actors. Commercial concerns and patent interests mediated the use and legitimization of truth machines. Their use may then have expanded intentionally, but the everyday practices of forensic psychologists—not the action of a unitary state—ultimately determined their application. For example, forensic psychologists applied techniques on their terms, seeking to make suspects less anxious and unscarred physically and mentally.

Forensic laboratories and forensic psychologists thus occupy a space separate from police custody. While still under police charge and working with investigating officers, forensic psychologists are certainly under police pressure. Yet the notion of custody changes between police station and forensic laboratory. Forensic psychologists ensure that suspects are relaxed in the chair before

conducting a polygraph test.[157] Or they conduct it several times to discern a pattern and note any signs of anxiety while presenting results. Similarly, BEOS works only if a person is undamaged neuropsychologically, and narcoanalysis requires doctors to ensure that suspects remain physically unharmed. With truth machines intended to replace physical torture, forensic psychologists distanced their work from the secrecy of police custody and operationalized the art of questioning. Ultimately, however, this distancing has failed as it has created another confessional site for interrogation, and become only a symbolic attempt to address physical torture with the help of science and where delegitimized methods can yield to new techniques.