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*Indian Economic Social History Review* 2003; 40; 425
DOI: 10.1177/001946460304000403

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Crisis, charisma and triage:
Extirpating the pox

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This article is a history of the last stage of the global smallpox eradication programme, christened in India as the National Smallpox Eradication Programme (NSEP). Here I have attempted to show how the Intensive Campaign of the NSEP was forced to abandon its erstwhile language of targets and returns, whose acme was the mass vaccination strategy of the 1960s, and switch instead to a language of crisis and cases. It instituted a new practice where vaccination once again became a moment in a larger armamentarium, though not in quite the same way that variolation was a moment in a larger therapeutic structure in the eighteenth century. Unlike variolation, where it was self-imposed, the eradication campaign’s rediscovery of individual segregation as a necessary tool, and village and community as hallowed space, were coupled with an imagery of the kill. In this imagery, smallpox had been radically transformed from a goddess to a demon that was no longer to be solicited and purged but fought against and vanquished. This leads us to two models of consecration and healing in the movement from the eighteenth to the twentieth century: from Sitala and the self to body populations and the state.

Introduction

A few months before 9/11, the Centre for Strategic and International Studies, the Johns Hopkins Centre for Civilian Biodefence Studies, the ANSER Institute for Homeland Security, and the Oklahoma National Memorial Institute for the Prevention of Terrorism hosted a senior-level war game examining the challenges posed by a biological attack on the American Homeland. Christened Dark Winter, they simulated a smallpox attack and warned of massive civilian unrest, the violation of democratic processes and a collapse of the medical services.¹

The ‘remedy’ to the possible attack came in two forms: the manufacture of 286 million doses of smallpox vaccine; and the rather self-confident assertion that in

¹ http://www.homelandsecurity.org/darkwinter/index.cfm

The Indian Economic and Social History Review, 40, 4 (2003)
SAGE New Delhi/Thousand Oaks/London
the case of an outbreak it can be contained, if not eradicated, by ‘search and destroy’ methods, whose hallmark was the ring vaccination strategy perfected in India. This assertion was made as some of the key participants in the war game had personally crafted and participated in the last great and monumental operation launched against smallpox in the Indian subcontinent.

This article is a ‘history’ of this strategy, which is now the ‘official’ (Center for Disease Control) position in the United States and, by extension, is likely to be the global WHO position, as the current czar of bio-terrorism in the United States (Donald Henderson) was the WHO head for the global eradication of smallpox in the 1970s. As part of this strategy, the armed forces and healthcare workers in the US began to be vaccinated in 2002, with the well-publicised vaccination of George Bush, as the head of the armed forces, in December of that year. The vaccination programme, which went into high gear with the war against Iraq, ran into rough weather in the wake of vaccine related complications. The health personnel who were not covered under the existing rules of service in the case of complications began to protest against the vaccination. While the American Senate was busy debating and rewriting the law and the compensation package in the case of vaccine related problems, the whole programme came to a grinding halt in early April with the first ‘heart-attack’ death of a vaccinated person. Toward the middle of April 2003, a few days before I left Washington, the Democrats had managed to convince the Republican government of a far more ‘generous’ compensation package. As I write this I do not know if this will necessarily get the vaccination programme back on its feet. But for the public at large, a different set of norms based on notions of crisis and emergency may come into play in the case of an ‘attack’. The American public, already fearful of being poisoned in various ways, may not necessarily make vaccination an easy affair. Meanwhile, professors of operations research from the business schools of Yale, Stanford and MIT have come out with their own mathematical models of the efficacy of the official ‘ring vaccination’ strategy. They have called instead for a mass vaccination strategy whereby all Americans will be vaccinated on the premise that this will drastically cut down the mortality in the case of an epidemic caused by a terrorist attack. This seems to be an even more unworkable proposition as it is now recognised that vaccination may be dangerous for immune-compromised patients, pregnant women, and children below and adults above a certain age. The list of who ought not to be given the vaccine seems to grow every day! But in the case of an outbreak these niceties may well be set aside. What the current debate does offer, however, is a perspective on what happened in the 1970s as part of the global eradication of smallpox.

It is quite clear that at the heart of the strategy, both now and then, is the vaccine and its mode of deployment. But in a replay of the past there is, as we can see, widespread suspicion of the State; the fear of vaccine related morbidity and

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mortality; questions about whether vaccination is likely to set up an epidemic; and whether the vaccination is at all necessary. The suspicion is made worse by the claim that the American Senate has approved a clause in the MOU with the manufacturers of the vaccine, which says that they cannot be held responsible for vaccine related deaths or morbidity.

It is interesting to note that in the story of the global eradication of smallpox, which in its last stage is virtually coincidental with the National Smallpox Eradication Programme (NSEP) of India, none of these anxieties seem to feature in its ‘official’ rendering. While current American anxieties appear to be a replay of nineteenth-century anxieties in Britain and the US, twentieth-century Indian anxieties often appear as a well-worn tropical trope of apathy, ignorance and superstition on the part of the public (masses really, as *public* is too exalted a term), and a health bureaucracy marked by apathy and mendacity, or one that is ‘ignorant’ of democratic norms in the fulfilment of vaccination targets.

In the case of a possible return of the smallpox as a global epidemic, the rest of the world (with the exception of Britain and some faint noises from Japan and Brazil), which has not even begun to address the issue (it may well be a non-issue, or as much of an issue as the weapons of mass destruction in Iraq!) might just be forced to replay the 1970s. It is difficult to envisage what that would entail. But this article, based on official reports, retrospective analyses by participants, and on interviews with three of the ‘principal’ Indian participants, gives us a part prospective but largely a retrospective rendition of the NSEP with a primary focus on the last stage, dubbed a campaign or the Intensified Campaign, which began in 1973 and ended by 1975.

I must both by way of context and as a further prelude to the arguments in this article state that this is the last of a set of three essays on the history of smallpox inoculation and vaccination that I have written, and all three are to be part of a larger work. The first of these essays was an exegesis of an eighteenth-century tract on the practice of smallpox inoculation in Bengal written by a Scottish medic. Cited repeatedly in the contemporary history and anthropology of smallpox in India, it has been invariably used to highlight the technique of inoculation in eighteenth-century India. Caught in disciplinary cleaving between anthropology and history, its original import had not been addressed. The exegesis, in restoring the text to its intended import, argued that it offered a theory of smallpox, and in this theory the technique of inoculation, which is so privileged today, was a moment in a larger therapeutics. I then proceeded to argue in another essay (Naraindas 1998) that the latter-day privileging of this moment resulted in seeing the nineteenth century as a stand-off between variolation (smallpox inoculation) and vaccination.

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5 Smallpox variolation as opposed to smallpox vaccination is the introduction of ‘live’ smallpox matter from the pustules or dried crusts of another smallpox patient. It was practised throughout...
The exegesis, however, recasts this as a passage from a therapeutic to a pure prophylactic that vaccination represents. And with the advent of vaccination as a ‘pure prophylactic’ we can see how, for more than a century and a half, vaccination returns (and their necessary corollary, targets) were to be the hallmark of attempts to cope with smallpox. The acme of this was the mass vaccination campaign of the 1960s.

In this article I have attempted to show how the NSEP was forced to abandon this language of targets and returns and ‘switch’ instead to a language of crisis and cases. It instituted a new practice where vaccination once again became a moment in a larger armamentarium, though not in quite the same way that variolation was a moment in a larger therapeutic structure. Unlike variolation, where it was ‘selfimposed’, the eradication campaign’s rediscovery of individual segregation as a necessary tool, and village and community as hallowed space, were coupled with an imagery of the kill. In this imagery, smallpox is radically transformed from a goddess to a demon, which was no longer to be solicited and purged but fought against and vanquished. In this fight to the finish the patient is merely a detour to the virus; all other diseases that are similar are a template or triage to smallpox; and the end justifies the means.

**Pilgrimage, Panic and the Virtuoso**

On 20 January 1975, an American epidemiologist attached to the smallpox eradication team in India stumbled upon an impending disaster. As part of a specially assembled international health corps, his job was to unearth cases of smallpox in what was dubbed as the last hot spot of smallpox in the world: Bihar. But the site of his sudden confrontation with the disease was more the cause of alarm than the sizeable number of cases unearthed. It was Pawapuri near Nalanda and the occasion was the anniversary celebration of Mahavir. Pawapuri drew to its temple Jain pilgrims from all over India. It transpired that smallpox had made its appearance as early as 1 January and had gone unreported due to a ‘doctors’ strike’.

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the world and in India it was backed by professional variolators and a presiding deity. With the advent of vaccination, which was originally cowpox, variolation was portrayed both in India and Britain as a form of treason that needed to be outlawed on the ground that it set up epidemics and hence was a public threat. Cowpox, in opposition, was portrayed as something that could not be communicated from patient to patient. But Holwell’s essay, as a normative text, allows us to recast this encounter. I have argued that the preference for variolation may have been due to the continuous failure of vaccination, making it a risky venture for individual patients. Variolation may have been preferred not only because it was tied to worship, but also because it was surer to ‘take’, and was a moment in a larger therapeutic structure. Hence, there was probably a pragmatic trade-off between vaccination, which was offered as safe by the state (but by its repeated failure leaving patients open to the ravages of smallpox), and variolation which, though notionally more risky, invariably ‘took’, and as a part of a larger therapeutics ensured individual care and safe passage to patients. For the full argument and the implications, see Naraindas, *Care, Welfare and Treason*. 

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The consequences were unnerving as the massive turnover of pilgrims in the past weeks implied that the disease had been carried far and wide by returning pilgrims. More were expected every day and scores would leave, many of whom would incubate the virus and show no immediate signs of the disease.

In its retrospective rendering by Dr Mahendra Dutta, the above incident had all the ingredients of high drama. On his arrival after the alarm had been raised, he realised that if not swiftly handled it was likely to be a major setback to the eradication programme, which had just turned the corner and was beginning to register a declining number of cases after a huge and monumental epidemic the previous May. But its larger fall-out in terms of tracking down all the pilgrims who had passed through the portals of Pawapuri seemed easier by comparison to what confronted him at the pilgrim site. While a register of pilgrims allowed the smallpox eradication cell to notify and cross-notify states and districts about returning pilgrims and impending outbreaks, the eradication protocol at Pawapuri ran into rough weather. It called for an immediate cordon around the village and its conversion into a quarantine site for a prescribed period. The impounded pilgrims were to be rapidly vaccinated, and new arrivals could gain entry only if they allowed themselves to be vaccinated. Though each of these measures came to pass, they were none too easy. There was a momentary stand-off as the pilgrims, in a familiar scenario, refused to be vaccinated on ostensibly religious grounds. The local superintendent of police who was at loggerheads with the district magistrate refused to co-operate, making it difficult to throw a cordon around the village.

At Dutta’s behest, the chief secretary of the state government intervened in the dispute between his subordinates; and the pilgrims were persuaded to submit to vaccination through their religious head. Having won the co-operation of the local administration and the religious head, it was easy to orchestrate the rest. More then 1,000 volunteers from among the pilgrims were mobilised to act as vaccinators, run a community kitchen, keep vigil, and get the rest to submit without fail to vaccination.

The recounting of the incident at Pawapuri is primarily based on personal interviews with Dr Mahendra Dutta (Mahendra Dutta, ‘Personal Interviews’, August 1996, New Delhi). As Assistant Director-General of Health (Cholera) with the central government’s Directorate General of Health Services (DGHS), he was appointed the central appraisal officer of Bihar during the last stage of the NSEP. During the course of interviews that spanned many hours and two sittings, he recounted his experiences with verve and enthusiasm. For that brief span of time he managed to transport me to a nether world that appeared capricious, bizarre and glorious in turns. It was an enactment that signalled the crossing of thresholds, of a liminal time and space; and his role as the chosen one—the man on the spot—who as the ultimate term of appeal bore the responsibility for the success or failure of the national-global eradication of smallpox, which toward the end seemed to rest on Bihar. I thank him for his time and warmth.

Brilliant, referring to the same incident, says that ‘nearly 2,000 telegrams were sent to people suspected of having been in contact with an active case’. See Larry Brilliant, The Management of Smallpox in India, 1985, Ann Arbor; and Dutta said they were sent to ‘150 districts’ (Dutta, ‘Personal Interviews’).

Dutta, ‘Personal Interviews’.
Although Pawapuri seems extraordinary,9 the measures outlined had been played out over and over again throughout the length and breadth of the country, especially in the four endemic states of Bihar, UP, West Bengal and Madhya Pradesh. By the end of 1974, every household, village or mohalla where smallpox was detected was cordoned off, its inmates impounded, ostensibly fed and compensated for loss of wage, and contacts vaccinated.10

Pawapuri was a miniature writ large with a rider: being a pilgrim centre it was potentially a site of dissemination, made doubly difficult by the fact that the pilgrims could take umbrage in faith to register a cohesive and cogent protest. But the methods and motives at Pawapuri were part of a larger piece, which in under six months produced a singular result in modern public health: the extirpation of smallpox. In May of that year the last recorded case of smallpox was unearthed in India. Two years later, India was certified to be free not only of the disease, but of the very virus. Since human beings were the exclusive hosts, the eradication of the disease meant that the virus had been extirpated from its 'natural' reservoir.

The official narratives of its departure from amidst us raise a host of questions, and not only about the modalities of its extirpation. They also surprise us with a retrospective audit of the measures adopted to combat it in the twentieth century. Vaccination in the nineteenth century, often portrayed as a monumental effort pitted against native prejudice with variolation as the handmaiden, touched a small portion of British India. Surprisingly, long after the setting up of vaccine production centres at the King Institute in Madras, and another at Belgaum, to produce liquid glycerinated vaccines of better potency and durability and thus put an end to the ‘arm to arm’ or the ‘calf to arm’ method, we discover that as late as 1946, exactly a 125 years after the instauration of a separate vaccine establishment for the rural areas of Bombay,11 vaccination was found to have been adopted in 4.96 per cent of its rural circles.12 As for re-vaccination, it was never a strong point with the British and was practised only in the Madras province from 1936; elsewhere it was adopted as an emergency measure during epidemics.13 In 1946, the colonising state appears rather differently. And the Bhore committee’s plaintive plea to set right a state that had been remiss had to wait till India became independent.

9 It certainly seemed so to Donald Henderson, the then chief of the global eradication unit of the WHO. When he visited the site with Dr Dutta, he was amazed at the measures taken and admitted that he would have been unable to pull it off in the USA as it would have amounted to a violation of individual liberty. Dutta’s response was one of puzzle and impatience. He wondered what was being violated when all he could see was a free-feed and a forced holiday. As he put it: ‘The people were getting fed without working, what could be better than that’ (Dutta, ‘Personal Interviews’). Henderson’s qualms (or was it admiration) did not seem to translate itself into anything.

10 Ibid.

11 In a ‘General Order’ published by the ‘Governor-in-Council’, dated ‘20 October 1821’, it was resolved that the Bombay Presidency would have an exclusive vaccine establishment that would cover the whole Presidency (General Department 1821–23: 46/51, MSA).

12 Sir J. Bhore, Report of the Health Survey and Development Committee. 4 vols, Delhi, 1946.

13 Ibid.
Post-Independence Figures and the Figuration of Smallpox

The official/WHO statement of the eradication of smallpox in India by Basu and others begins by stating that in 1951 India reported ‘more than 250,000 cases’ of smallpox with ‘64,000 deaths’: ‘as in most years, [it] represented over half the cases of smallpox in the whole world’. The touting of these figures, which open most narratives of smallpox, is what sets the narrative on its way. Its logic dictates, as an opening scene, a gloss on comparative figures of smallpox as a proportion of cases and deaths of either population, or of other diseases in India or world-wide. The gloss legitimises (this is not the only mode of legitimising, as we will currently see) ‘vertical programmes’ like smallpox eradication and, as a percentage of cases world-wide (‘more than half the cases’), places India at the centre of ‘a geography of blame’. It is a framing device that legitimates and gets the narrative off the ground. Within this narrative logic India is now conceived to be in a ‘state of disgrace’. This is a tacit but recurrent theme and provides the motive for local-national efforts to rise from a state of fall. Conceived in such a form, any price for redemption and grace, which is to be totally free of smallpox, seems worth paying.

It was only in 1961–62, however, after the recommendation of an expert committee set up in 1958, that a full-fledged eradication programme was launched. Christened the National Smallpox Eradication Programme (NSEP), it attempted to cover the entire country through ‘mass vaccination’. As part of it, 80 per cent of India’s population was vaccinated. While this reputedly had its effect in parts of India, especially the southern states, there was a recrudescence in 1967 with 80,000 cases, which was ‘almost the same number of cases and deaths as were reported in 1963 when the programme started’. In May 1974 there was an even larger epidemic with 188,000 cases and 31,000 deaths (ibid.: v), which as we will presently see, was for entirely different reasons. And in precisely a year from then smallpox had ceased to exist.

The puzzle here, apart from its departure, is why did vaccination, the prototype prophylactic, have such a small compass in pre-independent India? When this lacuna was sought to be set right in the 1960s through the strategy of mass vaccination, it resulted in a dramatic increase in its reach. Ironically, in substantial parts of India, it seemed to make little difference as brought home by the 1967 epidemic. The passage from this to its extirpation seems all the more singular. How

15 Ibid., p. 23. The 1967 epidemic, like most others, seems to be symptomatic of an institutional breakdown and scarcity following a crisis, which in this case was the ‘Indo-Pakistan war, devaluation of the rupee, general rise in prices and scarcity of many resources’ (Brilliant, The Management of Smallpox, p. 14).
16 We momentarily side-step a different sort of question, only to approach it later from elsewhere. And that is, instead of following suit, we could ask: why was mass vaccination successful in some areas and not others? Instead of resorting to the new strategy of ‘surveillance and containment’,
was this passage effected and what did it entail? More importantly, what were the terms that allowed the passage?

The passage seems to have been effected by a radical change in strategy. Till 1968, measures against smallpox were organised on principles and concepts that could be traced to the nineteenth century. In stark contrast, Pawapuri represented a complete inversion of what had been the vaccination practice since its inception in 1802. The change of strategy, from a historical point of view, allows us to see previous practices in clear relief. The past appears in perspective while we assess the present.

A Language of Crisis and Cases

At the heart of the new strategy was the abandonment of mass vaccination. The initial attempt to set right the paucity of its reach by vaccinating 80 per cent of the population, and when this proved not enough raising it to 100 per cent, was given up as an impossible dream. It was replaced by what retrospectively seems an equally impossible dream: the attempt to unearth each and every case of smallpox by a series of methods and means that would work in tandem. In the new scheme, while the attempt to vaccinate every single body was given up, it would in its attempt to unearth every single case bring everybody under its ambit. But the route taken would be different. For the first time the incidence of disease, which seemed to have had a life of its own irrespective of the extent to which vaccination was practised, would be the object of interest. Every case, as in Pawapuri, would be the focus of immediate attention. Isolation, quarantine and the vaccination of contacts—whose ambit was increasingly widened as the number of cases began to fall—would be the goal. The spatio-temporal grid imposed on cases and their contacts was extended further by an attempt to track down the origin of each case. The backward movement would work along with a forward movement to track down dissemination. The fear of dissemination called for the impounding of patients at home and pilgrims at Pawapuri; and the notification and cross-notification of the attempt to check their larger spread. But every pilgrim incubating the disease could spread the infection during the course of a journey to many, which by a relay would spread the disease in directions and sites entirely other than those of the eventual destination of the returning pilgrim. Hence, at the heart of the new attempt lay the search for cases through a system of surveillance, and their containment by isolation, quarantine and vaccination of contacts. While the conceptual shift and its administrative reworking did not come full-blown and

why was mass vaccination not persisted with? This question acquires meaning because the new strategy was vertical: for a short period of time it threw all the state’s resources into smallpox eradication to the virtual exclusion of everything else. The query from within the DGHS was: is this necessary? (Dutta. ‘Personal Interviews’; R.N. Basu, Personal Interviews, New Delhi, 1996). Dr Basu said that this was a question repeatedly posed, and he and others who were converts to the new strategy were often at sea.
ready-made, the giving up of mass vaccination, which rested on a method of gauging the success of the programme that went back to the nineteenth century, marked a major shift. Mass vaccination as the primary index of success revolved around quantum and reach. Its final index of success, smallpox mortality, seems to have had no immediate bearing on a job well-done or ill-done. As Brilliant, one of the participant-chroniclers has put it, in mass vaccination the important thing was the measuring of output (vaccination returns) rather than outcome (cases); and in keeping with this ‘dictum’ there was no systematic method of recording smallpox deaths till 1911.\(^{17}\)

The vaccine establishment throughout the nineteenth century appealed through a rhetoric of returns to the number of persons successfully and unsuccessfully vaccinated. It was primarily preoccupied with whether the disease took or not. Concepts such as vaccination as percentage of population, or the incidence of disease, or the case-fatality ratio, were refinements that came much later. And even after their advent, it was primarily oriented towards vaccination returns: the system of mass vaccination being the apogee of this principle. In this scenario, both mortality, and more importantly the incidence of disease, which was to become the fulcrum of the new strategy, was an indirect threat to the vaccine establishment and hence suppressed and unreported. In 1963, the National Institute of Communicable Diseases (NICD), as part of a review of the NSEP, ‘introduced a new measure of effectiveness—the percentage of the population adequately immunised (per cent vaccinated multiplied by vaccine efficacy). Although this was an improved and quantifiable target, it was still an output measurement. The outcome—smallpox incidence—was not being monitored’.\(^{18}\)

If the emphasis had been on cases rather than vaccination returns, it would have called for a different strategy: of isolation and quarantine which, along with vaccination, was to become part of the triptych of the new containment strategy.\(^{19}\) Plague bears this out. In the years 1896–98, when Haffkeine’s plague inoculation was nascent, it called for drastic public health measures of isolation, quarantine, body and house searches and fumigation. Rand’s ham-handed methods in Pune led to his assassination and the proposition became untenable. Haffkeine’s anti-plague inoculation that came close on the heels of this backlash soon proved a way out for both patients and public health officials. Patients, in comparative terms, felt an injection was far less intrusive than a body search for buboes, or ‘abduction’ to infectious disease hospitals, isolation, quarantine, house-searches

\(^{17}\) Brilliant, The Management of Smallpox, p. 6.

\(^{18}\) Ibid., p. 124.

\(^{19}\) Since the incubation period of vaccination was shorter than the natural infection, if given promptly to contacts it either prevented smallpox, or modified it (Dutta, ‘Personal Interviews’). But the opposite was equally true: vaccination would fail to be effective in all those cases where the incubation was well underway, resulting, as it has from its inception, in a loss of faith. Hence, apart from the rapid vaccination of contacts, their isolation and quarantine were stressed in the new strategy.
and fumigation. In the case of smallpox with its long history of variolation and vaccination, with the exception probably of compulsory hospitalisation in the cities, these measures do not seem to have been adopted. The emphasis on vaccination, in fact its very existence, resulted, as in the case of plague after Haffkeiene, in its functioning as a stand in for other measures. And in epidemic situations it pretended, when its prophylactic power was under question, to be a prophylactic under the notion of re-vaccination. Hence, the focus on the incidence of disease, as treating every case as a crisis, is absent in the smallpox literature. The incidence at Pawapuri, in sharp contrast and in a radical turn around, rested primarily on focusing on the incidence of the disease: not merely on mortality, but on its outbreak. Initially clusters of cases, and later, every case was treated as a crisis and called for measures that were startling. This focus on incidence, and recasting it in a new language of crisis, rather than as a statistical embarrassment that needed to be quietly buried, was both necessary and allowed, in an act of mirroring, the emergency measures adopted.

The question that needs to be posed is: how did this happen? How did this language of crisis come about and how was it sustained? While the colonial government in the case of plague in 1896 largely failed to manufacture a consensus based on a language of crisis, the smallpox eradication programme thrived on it. Far before its possible effect on populations, the language of crisis that came directly from focusing on the incidence of the disease had a far-reaching impact on a health establishment entirely unused to this new rhetoric. Used to suppressing incidence, returns and incidence were in disparate conceptual registers with no bearing on each other. The establishment seemed to rest entirely on vaccination and returns, and the strategy of mass vaccination was the acme of this conceptual vision. In the face of this unenviable legacy, how was the vaccine establishment turned around to shift its focus from vaccination per se to vaccination as a moment in a different armament? How was the reporting of both cases and deaths, which were never the primary focus and were the index of failure, legitimised? How was this failure turned around and made the primary index of success?

**Agent Smallpox**

William Foege, writing at the height of the intensified campaign in April 1975\(^1\) posed a rhetorical question: how did the strategy of smallpox eradication differ from smallpox control? He said the focus was no longer on individuals and bodies. Earlier strategies of mass vaccination, although monumental in effort and often couched in a language of attack, with their mobile squads of 'attack teams' and

\(^{20}\) A good example of this is Sir Charles Rivaz, the 'incoming lieutenant-governor' of the Punjab, who 'was to rely upon inoculation as the main means of containing plague and to immunize at least two-thirds of the population' (David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-century India*, Delhi, 1993, p. 234).

‘mopping up’ teams, were essentially strategies of fortification and defence: ‘defending the individual against the agent’. The new strategy in contrast was truly offensive: ‘it focuses on protecting the country and the individual by eliminating the agent’. Once eradication had been recast in these terms, it lent itself to a language of insurgency and counter-insurgency; of hidden agents against whom one needed to wage an internal war by first ferreting them out and then containing them so that they did not escape past the cordons to start a fresh foci of trouble. Hence Jerome Klein, in the same issue of Swasth Hind, could talk of ‘Search and Destroy’ missions to beat smallpox.

In 1971, a few years after the launch of the global eradication campaign and the introduction of the new strategy world-wide, Dr R.N. Basu joined the Directorate General of Health Services (DGHS) as the smallpox programme officer. By the time he arrived an ‘important element’ had been added to mass vaccination: ‘they used the term surveillance’. He did not quite understand what the term meant as he was acquainted with mass vaccination. The import of the term was brought home to him through a WHO-sponsored exposure in Afghanistan and Ethiopia. It was in Ethiopia that the term became tangible.

The Ethiopian smallpox authorities, apart from regular staff, had 80 Peace Corps volunteers, mostly Americans. I was attached to one of them. I went wherever he went, stayed wherever he lived. He was provided with a jeep. Was own driver and on the way he used to ask about smallpox. If he found the need for vaccination—he used to carry a vaccination kit—he would vaccinate. So I found that the young man of the Peace Corps was a driver, a vaccinator, a surveillance worker. He contacted not only wayside people but also the local health officer, though he was probably just a graduate from some university. He was Australian. So, I got the impression, we have 30,000 vaccinators but even then we are so rigid. We don’t have the flexibility to send 50 of them to a place, ask them to stay there and do the work, I do not have that type of mobility to . . . (Basu 1996).

For Basu, the young Peace Corps volunteer, forever on the move, was the antithesis of an ossified health apparatus. His ceaseless search for ‘agent smallpox’ connoted

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22 Ibid., p. 122.
23 Ibid.
25 Based on personal interviews with Dr R.N. Basu (Basu, ‘Personal Interviews’). As Assistant Director General of Health (Smallpox) at the DGHS, he was the executive head of the National Smallpox Eradication Programme of the Government of India. In the course of many sittings, he shared his experience in a mode that was remarkably at variance with either Dr Dutta, or Dr Tiwari, who will soon appear in the narrative. The significance of these differences in style will be currently explored. Meanwhile, I must thank him for making us feel always welcome and the warmth with which both he and Dr Tiwari gave of themselves.

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both mobility and flexibility. But what distinguished this young man on the move from the earlier mobile squads of the mass vaccination period? Unlike them he was in search of manifestations of the virus. He was not there to fulfil a target but to ferret out actual and prospective cases and, having done so, vaccinate those around the case to contain its spread by a cordon of the vaccinated, and thus break the chain of transmission.

If 1971 was the moment of transition to a new mode, then 1973 marked the beginning of the Intensive Campaign, which was launched as a joint programme between the World Health Organisation (WHO) and the Government of India (Goi). Its launch in October 1973 was preceded by a meeting where Basu recalls telling the WHO, half in jest, to supply him with 80 volunteers as in Ethiopia. To his surprise the WHO responded with an initial contingent of 20 ‘epidemiologists’. The GoI in turn complemented it by finding 20 more to match the WHO contingent. Each of them, however, unlike the ‘Lone Ranger’ in Ethiopia, was supplied with a driver and a paramedic. Thus was launched a special corps of ‘volunteers’ modelled, at least in Basu’s mind, on his Ethiopian experience. Agent smallpox had managed to set in motion a select band in his search.

An Atlas

But India was not Ethiopia. Given its size and population, even 80 epidemiologists would have been too small a number. If they were not to be spread thin, if they were to make a significant difference, a method of apportioning and assigning them to different regions had to be found. One needed a map on a principle that would allow one to concentrate one’s resources where they were most needed, rather than uniformly assigning a team to each district or block, or some pre-established administrative unit. In that transitory period between 1971–73, a new pathological atlas of smallpox, of endemic and non-endemic zones based on incidence, came into being. But this new atlas of endemic and non-endemic zones was even more thoroughly transformed by a conceptual shift based on a certain reading of epidemiological observations. Foege, in the same article, pointed out that a major conceptual revision was effected when the developing world was viewed as if it was the developed world. The fall-out of this shift in perspective was that rather than seeing the whole country as being run over by smallpox, we get a new atlas of ‘epidemic’ pockets surrounded by areas free of smallpox.

Smallpox is a focal disease within a country, district, block or village. In a very real sense we are faced with islands of smallpox surrounded by large areas with no smallpox . . .

26 Basu et al., The Eradication of Smallpox, p. 49.
27 Foege, Strategies.
28 Ibid., p. 120.
The epidemiological observation of its focal nature prompted Foege to claim that

an endemic country can be viewed as a non-endemic country with dozens or
hundreds of importations. With this concept the lessons of non-endemic coun-
tries could be tried in endemic countries.\textsuperscript{29}

Before we confront the consequences of this import-export model, the new atlas
revealed that large areas of India were actually more or less free of smallpox. Was
this due to the success of mass vaccination in these areas? Foege, however, argued
that attributing the disappearance of smallpox to vaccination rates could be mis-
leading as an NICD survey of the early 1960s showed the following:

In Madras a sample of 18,000 persons showed only 63\% had been vaccinated
in the campaign. Yet smallpox disappeared earlier from Madras. In contrast a
sample of 26,000 in Dharbhanga showed 81 percent coverage and yet smallpox
transmission continues in Dharbhanga in October 1974.\textsuperscript{30}

Not only did it continue in 1974, but in 1963–66, after the so-called 81 per cent
coverage between 1962–64, the number of smallpox cases increased. Foege here
is silent on whether this meant the combination of vaccine failure, poor technique
and exaggerated coverage figures for Dharbhanga were the reasons for the continu-
ning transmission in Dharbhanga at the moment of his writing. Did 81 per cent in
Dharbhanga amount to no more than 8 per cent, and did 63 per cent in Madras
mean almost as much as the claim?

The new method of surveillance and containment was advocated on retrospective
readings such as these, where vaccination returns did not necessarily provide a
clue to the eventual role of eradication. The origin, however, lay in the experience
initially gained in West Africa, where the apocryphal story attributed to Foege
was that the principle of surveillance and containment was born of the exigencies
of war. The resulting shortage of vaccine led to a practice turned maxim: give it to
those who need it.\textsuperscript{31} Vaccinating the contacts of those down with smallpox rather
than attempting to vaccinate everybody led to some startling results.

In Nigeria, search and containment procedures were utilized in an area of 10
million people with a population of 450/KM. In five months smallpox disap-
peared with the vaccination of only six to seven percent of the population. In
Sierra Leone with the highest smallpox rates in the world in 1967, eradication
was achieved when less than 50 percent vaccination coverage had been attained.\textsuperscript{32}

\textsuperscript{29} {Ibid.}, p. 122.
\textsuperscript{30} {Ibid.}, p. 120.
\textsuperscript{31} Dutta, 'Personal Interviews'.
\textsuperscript{32} Foege, Strategies, p. 122.
While the new atlas made visible the endemic and non-endemic regions, and allowed the concentration of resources, the import-export model advocated by Foege pointed up another facet of transposing the response structure of the First World to the Third World.

A New Calculus

The import-export model was constitutive. The cardinal premise of the import-export model was that certain countries had indeed reached a state of grace. Or if they had not, then the model of importation and exportation allowed them to constitute themselves as being free. Every detected case in this scheme was automatically an importation, which per force plunged the country into a crisis. Hence, on the premise that the country was free, and should be kept free, every case was an importation to which one responded as an emergency.

These countries would respond to smallpox importation as a health emergency with a programme to locate and isolate all smallpox cases and to locate and vaccinate all contacts.33

And what was the lesson learned? The key lesson learned was that importations were more easily handled than expected.

There have been 53 importations of smallpox to Europe since 1950. Occasional problems have been encountered but the majority of experiences have shown that importations are quickly stopped with usually not more than four or five cases. The average importation in recent years is stopped by the second generation and surprisingly the ease of containing an importation has not been related to the vaccination levels of the country but rather to: (1) how quickly the problem was recognised as smallpox, and (2) how quickly contacts were identified and vaccinated.34

The operative phrase here is ‘how quickly’. But quickness was a corollary of an imposed state of emergency, which in turn presupposed that the country was free of smallpox and should, at all costs, continue to be so.

While the 53 importations to Europe were stopped by the ‘second generation’, stopped far more quickly than expected, the ‘cost’ of a perpetual vigil was a new calculus in the launching of the global smallpox eradication programme. While it is difficult to come across prospective accounts of a calculus of costs, we certainly do have a retrospective account of the global campaign. The Chief of WHO called it a two billion-dollar gift from the developing world to the developed world, which should be seen not as a one-off gift but as something saved and hence

33 Ibid., p. 119.
34 Ibid., pp. 119–120.
given in perpetuity. The share of the developed world in this budgetary provision was small with the United States contributing between 1 and 2 per cent and recovering its investment every 26 days that the world was free of smallpox.35

Henderson, in an invited lecture at the Royal Society on Jenner’s 200th anniversary, said that the motive for the eradication came from elsewhere. Launched in the same year as the promise of ‘putting a man on the moon in ten years’, it was seen as a parallel and answer: ‘If a man could be sent to the moon in 10 years, smallpox could certainly be eradicated on earth in the same amount of time’.36 Although the parallel to the mission to the moon might seem flippant, and be removed from a calculus of costs, what it encodes is a certain calculus of time. If the model of importation imposed a local emergency, and a certain calculus of costs, the mission model imposed a global emergency. The second, if successfully brought to a head, would altogether do away with the first. If one could re-conceive and transpose the response structure of First World on the Third World, if one could apply the model of imports and exports and its logical corollaries of locate and isolate those down, and locate and vaccinate contacts, then the goal was within reach. But time was of the essence. One had to be quick enough to break the chain of transmission; and the campaign, ideally, should have a temporally well-marked entry and exit: even if it was seemingly arbitrary.

The Passive and the Active

At the very inception of the National Smallpox Eradication Programme in 1958, the ‘Central Experts Committee’37 had recommended a more potent vaccine (given the poor take rates with the liquid glycerinated vaccine—a continuing saga from the nineteenth century); legal instruments and better record keeping of births and deaths and an organisation for ‘early warning’. The committee realised that it was not mortality from smallpox but a method of detecting cases which was the key to eradication. But this call for a ‘radar station’, which went unheeded, was a passive mode. It presupposed notification and reporting by health officials and the general public. This passive mode of surveillance worked on the premise that every case of smallpox would be enough of an alarm to invite prompt reporting. But a legacy of targets, and a public fearful of being inconvenienced by the state, made the prospect of notification and reporting of smallpox seem bleak. While a passive mode made sense in non-endemic countries, where every importation could be treated like a blimp on a radar screen, and galvanise a search and contain squad, in ‘endemic’ zones a different strategy was called for. What the passive mode of surveillance did point toward, however, was this: once a case had been reported, it could swing the health apparatus into frenzied action.

If the new strategy revolved around the twin terms of surveillance and containment, then the passive mode answered the second component adequately. The rapid location and isolation of cases and the equally rapid tracking down of contacts and their vaccination issued forth from an imposed emergency and vigil. It was a call to arms on the Agent having been sighted; or his possible presence reported. But it was not a ‘search and destroy mission’ as yet.

The modality for an active search was premised on the quasi-mythic motif of the Lone Ranger ceaselessly criss-crossing the countryside in his jeep looking for Agent Smallpox. What this motif signalled, however, was that the very organisation of the smallpox establishment, both in the GOI and the WHO, would be radically transformed. Actively looking for Agent smallpox was the stated goal and the whole machinery was to be reworked toward it. The special corps of volunteers, apart from being the catalyst, would provide a model for the regular staff to emulate. A new reporting system, their precise analysis, assessing the truthfulness of these reports, and finally making a somnolent health apparatus to act it out was an organisational endeavour of monumental proportions. In all this, time was of the essence. The re-christening of smallpox eradication from a Programme to a Campaign, and an Intensive Campaign from July 1973, signalled an entry into a liminal zone: a rite de passage that would effect a change of state. If the mission to the moon provided the WHO committee a mythic motif, it certainly made for an eschatology: for the first time, a long standing stigma—perhaps the most hideous, for unlike leprosy those who survived were ‘returned’ rather than being interred while alive—promised to forever depart from amidst us: not of its own accord but by being pursued, ferreted out, corralled, and allowed to smoulder and die.

**Surveillance: Search, Record and Report**

The search, in retrospect, was classified into four phases: (i) Between July and August 1973, the municipalities and towns would be targeted in a search and containment drive to decrease the urban reservoir of infection. (ii) Between September and December the four endemic states of Bihar, Madhya Pradesh, Uttar Pradesh and West Bengal were to be targeted to assess the problem and reduce the number of smallpox foci. (iii) 1974 was the year that would break the back of smallpox in the endemic states and keep the liberated zones—the non-endemic states—free from smallpox. (iv) In January 1975 ‘Operation Target Zero’ would be launched. Its aim would be to reach zero-incidence throughout India at the earliest.38

The search, apart from the special squads, would involve virtually the entire health apparatus. The first week of every month would be devoted to searching every village and mohalla (neighbourhood). Apart from these pre-given units, all gathering places, such as schools, fairs, markets, religious centres and marginal zones such as construction sites, pavements, slums, border areas, and eventually inaccessible sites like Abujmarh in the heart of Bastar district, in Madhya Pradesh,

38 Basu et al., The Eradication of Smallpox, pp. 29-30.
would be searched by special squads. In one of the first meetings at the DGHS, where this search plan was put up for discussion, the various departmental heads protested vehemently about mobilising the staff under their head for the smallpox search: ‘Some would say this is October, time for our family planning campaign,’ recalls Basu.39

Anyway, we sold the concept. It was not easy but it happened. Those one-week searches were done in October, November and December of 1973. Cases would be detected, epidemiologists would concentrate on the areas and take containment action, then go for the next search in the second month.40

The village searches, largely with the help of headmen, proved to be ineffective, especially in certain areas. Thus was born the house to house search which also made containment measures quicker and easier.41

Since the ultimate aim of the search was the containment of smallpox, both in terms of incidence and spread, prompt and comprehensive reporting of the search was cardinal. The entire health apparatus engaged in the search was expected to promptly report the cases to the primary health centres (PHC), each of which sent a collated weekly report to the district headquarters. From there it wound its way to the State and onwards to the Central Bureau of Health Intelligence at New Delhi with a copy to the WHO office at New Delhi, and finally by the end of the third week to WHO, Geneva, where it found its way into a global epidemiological report.42 Thus, at every level, the drama of smallpox eradication unfolded which, through a comparative casting, gave a global picture of its progress.

With the passage of time, the search was increasingly refined: every searcher was given a special recognition card showing a case of typical smallpox, a public reward was announced for reporting smallpox, which rose from Rs 10 to Rs 1,000 as the number of cases fell. The final refinement ‘was the attempt to assess the search both by a physical verification of selected villages (which proved to be another search) and by interpreting the search records’.

The search was assessed by revisiting a sample of villages. The sample was not random; rather the areas known to be weakest (with lowest performance in other assessment criteria), along with those most difficult to reach, were preferentially assessed. Thus the estimate was not of the average search effectiveness but was skewed downward since the weaker areas were assessed more often. Since the surveillance system was only as strong as its weakest link, this form of assessment gave a more useful evaluation of it. This strategy allowed assessors also to function as second level supervisors for problem areas. Assessment forms, guidelines, and job descriptions were drawn up. Assessors recorded

39 Basu, ‘Personal Interviews’.
40 Ibid.
41 Basu et al., The Eradication of Smallpox, p. 138.
42 Ibid., p. 120 and Figures 6.3 and 6.4.
what percentage of people interviewed could answer three questions in the affirmative: (1) Had they seen a search worker? (2) Did they know about the reward that was offered for any case of smallpox detected in India? (3) Had they seen a smallpox recognition card?43

While the discrepancy between the assessor’s report and the searcher’s report vis-à-vis (1) and (3) above revealed the effectiveness of the search, the question about the reward was also an assessment of a multimedia campaign inviting and inducing a mute general public into a grand confessional.

And for a health apparatus used to normally suppressing incidence, it signalled that reporting incidence was not only legitimate but rewarding.44 Toward the end, to make sure that cases did not go unreported by default in a possible scenario of mutual suspicion between a member of the general public and the person reported to, the award was extended to both. But the question that arose was: what was to be reported? Apart from clear and palpable cases of smallpox, what was the searcher to do about incipient and ambiguous cases? Since smallpox was part of a class of exanthematous diseases, characterised in the initial stages by fever and rash, and often difficult to distinguish from chickenpox, what was the searcher to report? To prevent any possible misdiagnosis all cases of fever and rash were reported (item no. 2 on the protocol),45 and entered into a ‘rumour register’.

They continued to be in the realm of rumour till they were actually confirmed either by clinical, epidemiological, or laboratory investigation; or by a ‘challenge vaccination, especially in the scabbing stage’.46 But what is of interest here is that the very ambiguity of an initial diagnosis, and the ‘lumping together’ of chickenpox and smallpox was turned around and made an index of reporting efficiency. Since the ‘fever and rash’ register was a template, a sorting mechanism, ‘in the absence of any effective interventions for measles and chickenpox’ it was reckoned that ‘the distribution of those diseases should be universal’.47

Thus, if a district reporting little or no chickenpox was sandwiched between two others reporting much chickenpox, something was clearly wrong. The assessors turned into detectives.48

Between physical verification and the interpretation of data that went beyond a particular searcher or PHC, and between inducement (reward) and the threat of making the searcher re-search not just a particular village ‘but every village on his schedule’ (Item no. 13 on the ‘search protocol’), it was underscored perhaps

44 This system of rewards began as early as 1969 in the so-called smallpox ‘free’ states that were reporting a low incidence of smallpox or sending in a ‘nil’ report (Basu 1979: 115), both to indicate that it was rewarding to report and to ensure that they did report.
45 Please see the search protocol in Basu (Basu, The Eradication of Smallpox, p. 141).
46 Basu, The Eradication of Smallpox, p. 123.
47 Brilliant, The Management of Smallpox, p. 56.
48 Ibid.
for the first time that suppression of cases did not pay. If there was no case, we made them file a ‘nil report’, said Dutta, ‘otherwise they lied’. More importantly, a nil report minimally ensured that it did not imply the ‘absence of the searcher rather than the case’. And when it appeared as part of collated data, and was found to be sandwiched between high incidence areas, it smelt trouble: the incongruity swung the apparatus into action.

**Containment**

If the vaccine establishment was conceptually and administratively unprepared for a search operation that eventually came to replace the time tested method of eradication by targets, it was probably even more unprepared to handle a series of outbreaks. As we pointed out in the beginning, ‘containment’ went under the name of re-vaccination during epidemics. It was tardy, and instead of case detection by enumeration, by tracking down the origin and spread and locating, en route into the past and the future fresh foci, it resorted to an unsystematic vaccination of the immediate contacts under the same principle of ‘mass vaccination’: the attempt to reach the largest number not necessarily in the quickest possible time. The containment measures that developed under the new dispensation brought into play an entirely new set of discursive practices. It called for a systematic and methodical refashioning of the existing apparatus, and for going beyond its bounds in ways that would have been impossible in ‘normal time’. The intensified campaign under the sign of an imposed emergency turned it into a liminal form and allowed, through its special team of epidemiologists, to ‘systematically break rules’.

I.C. Tiwari, who joined the campaign on 1 January 1974 as senior epidemiologist, was asked to take charge of East and West Champaran districts in north Bihar. With two junior epidemiologists under him, each of them provided with a jeep, a paramedic and a driver, their brief was mainly confirmation and containment of cases: unearthed by the active monthly searches, and by the personnel of the health apparatus during the intervening weeks as they went about their other duties. A typical day, said Tiwari, began by him arriving at the district medical centre to examine the ‘rumour register’. Before he and his juniors set out on confirmation and containment activities, he would ensure that the ‘relevant information’ that needed to be forwarded to other districts and state headquarters was despatched.

The arrival at the village was marked by an attempt to confirm the rumour, and in case it was suspected to be smallpox, the containment measures were immediately brought into play. These containment measures would have been largely unsuccessful if not for ‘local participation’. Tiwari, on repeated questioning, stressed that the ‘operation’ largely relied on ‘local youth’ who were ‘hired on the spot’ as both enumerators and vaccinators.

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49 Dutta, ‘Personal Interviews’.
after January 1975 was to be completed in three hours) was followed by the vaccinating of contacts and the surrounding households, and eventually the whole village. The ‘local youth’ trained in ‘20 minutes’ were pressed into service to carry out the vaccinations. This was facilitated by adopting a new instrument and its attendant technique, and the production of a potent freeze-dried vaccine. While the long history of ‘vaccine failure’ was ostensibly set right by the freeze-dried vaccine, in which India had become self-sufficient by 1973, the new technique represented by the bifurcated needle called for nothing more than placing a drop of vaccine on the designated area (the forearm or halfway up the upper arm between elbow and shoulder) and applying enough pressure (20 times) through the vaccine to merely introduce the vaccine into the skin without drawing any blood. It was painless, easy, quick and did not call for any washing with soap or water as it caused virtually no local infection or sloughing as was the case with the earlier rotary lancet, said Dutta.\(^5^1\) And it gave 100 per cent take rates, making it both safe and effective. When he was asked as to whether they assessed the take rates, he said: ‘we did not have time for all that’.\(^5^2\)

Tiwari and his band of ‘local youth’, who doubled up as enumerators, vaccinators and watch guards, conjure up images of an arcadia, facilitating smooth and safe passage in what could often be an uneasy stand-off between a containment squad and a village, especially with respect to those households where actual cases were detected, calling for the isolation of the patient and his immediate family. Even here, the report by Basu and the renderings of Tiwari and Dutta repeatedly stressed that the impounding was hedged in by compensation by way of food and money for foregoing work and wages, and the organising, in case there was a cluster of outbreaks, of a community kitchen so that the containment strategies were carried to their end.\(^5^3\) This new-found commensality, where it was ‘the local people who often taught and showed the way’,\(^5^4\) was rudely shattered if there was a death following containment vaccination: ‘often caused by extenuating circumstances’.\(^5^5\)

\(^5^1\) Dutta, ‘Personal Interviews’.

\(^5^2\) Ibid.

\(^5^3\) Pelis draws our attention to the fact that after the French revolution, and the collapse of the Faculties, the ‘revolutionaries saw inoculation as eminently popularisable, a procedure that all citizens might perform preferably on each other’ (Kim Pelis, ‘State Medicine and Pharmaceutical Production in France’. Paper presented at the workshop on Immunisation and the State, at the Centre for Development Economics, Delhi School of Economics, Delhi, 16–17 January 1997, p. 4). The hiring and training of local youth to act as enumerators and vaccinators—‘trained in 20 minutes’—seems to evoke this momentary dream of the late eighteenth century. The lie to this is offered by Paul Greencugh in his ‘Intimidation, coercion and resistance in the final stages of the South Asian Smallpox Eradication Campaign, 1973–1975’, Social Science and Medicine, Vol. 41, No. 5, pp. 633–45, 1995. Greencugh (and others in that special issue) details a number of such stand-offs, with an extreme case being the one that Dutta refers to (see p. 450 further on) of an entire tribal village being cordoned off. But this ‘dual’ mode of arcadia and violence, and the necessary gloss, points to the fact that for an operation of this scale, local participation, whatever the modalities of enlisting it, was an important and crucial element.

\(^5^4\) Basu, ‘Personal Interviews’.

\(^5^5\) Dutta, ‘Personal Interviews’.
This harsh lesson further speeded up containment activities and ensured that the initial containment vaccination of the enumerated and designated area would be covered in 48 hours.\textsuperscript{56}

Between an imposed emergency and exigencies, the containment protocols brought into play an assiduously worked out set of practices. The three legs on which it stood were 'containment', an 'epidemiological investigation' and a 'follow-up'. The first involved case finding by a search through verbal enquiry, the recognition card, and through the broad template afforded by 'fever and rash'. If the case was confirmed, either by the epidemiologist or one of the state medical officers, then it set in motion the hired 'local youth' on to a household enumeration followed by containment vaccination. As both Dutta and Tiwari pointed out, in 1974, in endemic states, containment vaccination was rather modest. As the cases began to fall, the size and area grew, and so did the methods: like the assessment of take rates, which given the growing number of cases due to the success of search operations was well-nigh impossible in the middle of 1974. If case finding, enumeration, and isolation of patients and vaccination were the containment protocols in the affected village as an immediate measure, the other two legs of the protocol unfolded an order of space that went beyond the confines of the immediate foci, and a marking of time dictated by the nature of the disease and its mode of transmission. The first, under the sign of source, was often forced to move beyond the immediate village to locate the original transmission; failing which it was passed onto counterparts elsewhere who were expected to confirm it and send a report to the notifying PHC. Its flip-side, under the head of contacts, may similarly involve a careful tracing of all those who may have come in contact with the cases in their travels, which as we saw in the case of Pawapuri involved 150 districts.

The order of time imposed by the disease and its mode of transmission involved a diligent 'follow-up' of the affected village/mohalla for four weeks (raised to six weeks in 1975) after the last case. Four and six weeks, like much that is contained in Basu's report,\textsuperscript{57} is normative and reflects an order of culmination. In the peak period of May 1974, isolation of the patient varied between 10–15 days;\textsuperscript{58} and follow-up, either to check vaccination take rates, or the isolation, may have been handicapped by both a want of personnel and a conceptual refinement that came from cumulative practice.

By the end of 1974, the dialectic between collated data and increasing refinement in the search and containment protocols emphasised among other things four indices, each of which allowed an assessment of what constituted good containment. The bench-marks that evolved were built around an order of time: (i) the interval elapsed between onset and detection, which pointed up the efficiency of the surveillance mechanism, for later the detection the more cases it had spawned in the

\textsuperscript{56} Ibid.
\textsuperscript{57} Basu et al., The Eradication of Smallpox.
\textsuperscript{58} Tiwari, 'Personal Interviews'.
interim;\textsuperscript{59} (ii) the interval between onset and reporting marked the efficiency of reporting, for on it depended the possibility of swift containment measures;\textsuperscript{60} (iii) as smallpox was a slow transmitter with only humans as reservoirs and was kind in the velocity at which it spread, the time interval between the first and last case in the outbreak provided an index of both surveillance and containment activities;\textsuperscript{61} and (iv) the time that had elapsed between the 'start of containment and the onset of the last case'. This was truly a measure of containment activity and by 1975 'each epidemiologist used this index in his area of responsibility'.\textsuperscript{62}

It was stated as an objective that no further case should occur in any outbreak more than 20 days after containment had started (three days containment and maximum 17 days incubation period). Each outbreak where cases did occur after 20 days was notified by cable to a central co-ordinating office and an experienced epidemiologist visited the outbreak to examine what had gone wrong. Usually, a hidden unprotected child or an unvaccinated newcomer was responsible.\textsuperscript{63}

If the above provided the grid of an expected practice, itself the product of a dialectic, what was it that allowed slippage between norm and practice to be corrected, rectified and plugged? Since surveillance and containment, built on the axes of space and time were operative grids, it called for a structure of responses that was both immediate and flexible. It called for delegation of responsibility and a devolution of power where the 'man on the spot' was at once a bricoleur and part of a larger centralised network toward which he could turn and which he was supposed to constantly keep informed. The 'central command', which could turn into a behemoth given the size of India, had to both network and respond immediately at every level. The attempt to anticipate contingency, and make it 'systematically possible', is summed up rather neatly in the weekly report that the special epidemiologists were expected to submit. The form for endemic areas, in inviting each epidemiologist to state the problem and suggest solutions, is the antithesis of a 'sanctioning' bureaucracy. And the assistance from every level tied the local team to the state and central levels in a loop.

Imprest, Impresario and the Antechamber

Among the many instrumentalities that were put into play to effect a devolution of power, one, which would allow the person on the spot to respond according to the needs of the situation, was the imprest account. For Tiwari, the man on the spot at the district level, this was a true symbol—an instrumentality and a sign—of the new practice.

\textsuperscript{59} Basu et al., \textit{The Eradication of Smallpox}, p. 217.
\textsuperscript{60} Ibid., p. 220.
\textsuperscript{61} Ibid., p. 222.
\textsuperscript{62} Ibid.
\textsuperscript{63} Ibid., pp. 222-23.
They advanced a fixed sum of money and we were free to spend it as we thought fit. If I wanted to change all four tyres of my jeep, I just did it. No questions were asked. Normally I would have had to get a sanction, and that could take a long time. We submitted our accounts periodically and if we wanted more money we asked and they gave it to us.\(^{64}\)

Tiwari’s very choice of example, of changing tyres, and all four at that, is interesting. The jeep, itself the sign of mobility and flexibility and the changing of tyres connoting ‘burning them up’, suggestive of ‘pace of work’, is overlaid with the financial flexibility of the imprest, which allowed Tiwari to act locally ‘by hiring enumerators on the spot’, or rapidly changing ‘worn out’ because ‘used up’ tyres—quite like the quick replacing of ‘used up’ vaccine if need be.

Tiwari’s rendering of his experience, both in terms of its tone and texture, was of an episode which was unusual both for its flexibility and the efficiency it generated, and the freedom and responsibility that came with it. Partially by temperament, and partially, I suspect, since unlike Dutta and Basu he was still active as a consultant to an international health agency, he was careful and muted in his responses. Hence, he was alarmed by any imagery that was suggestive of war. If he had been asked to pen his experience it certainly would not have been called ‘search and destroy mission to beat smallpox’. I draw attention to this because the campaign seemed to draw on at least three styles, each of which was a rhetorical positioning that reflected both an ideal and a fact. If the Imprest was symbolic of the quiet and quick efficiency it afforded the field officer, then the antithesis of this was the Antechamber in which Basu sat. As executive head of the National Programme and country co-ordinator, it was largely his ‘office’, along with a parallel structure at the WHO, that had to not only immediately respond to the demands of men like Tiwari, but constantly collate, analyse and refine protocols, mobilise personnel and resources, train, brief and debrief epidemiologists entering and exiting the field, and provide the necessary logistics to make a smooth operation of mammoth proportions possible. Basu’s dry, slow and thoughtful responses, often carefully and shrewdly phrased, were like his ‘shorn of all frills’ report for the WHO.\(^{65}\)

In both instances, it is the recurring motif of adventure that gives the lie to the new order. For Basu, the volunteer was suggestive not of routine and reach, but of a calling, where the ‘young man of the peace corps’, instrumental in his conversion, ‘slept in hovels’ and moved hither and thither in search of smallpox. And for Tiwari his peregrinations in forested and dacoit-infested north Bihar, with large amounts of cash—the imprest—was evocative in part of ‘what it was all about’.

But if the antithesis of this adventure was the Antechamber, it appeared both in Basu’s and Brilliant’s rendering as a precise combination of hard-nosed pragmatics and bureaucratic rule breaking: only to see that rule breaking in the field was both systematic and the norm, and hence, in a sense, routinised.

\(^{64}\) Tiwari, ‘Personal Interviews’.

\(^{65}\) Basu et al., The Eradication of Smallpox.
The third style of ‘pure charisma’ was represented by Dutta. Sent to Bihar as the smallpox operation was picking up momentum, on the upward curve of a highly successful search operation that was to result in a huge epidemic in May 1994, Dutta appears as the impresario of an operative ballet staged on a grand scale. It was he who had to intervene at Pawapuri when the civil administration and the police department between them threatened to jeopardise the programme. Similarly, on his arrival in Bihar, when he discovered that one of the key state level personnel in charge of smallpox ‘had to go’, as he was both corrupt and completely disbelieved in the new strategy, he had to engage in complex manoeuvres to have him removed.

The leitmotif of his narration was a bottle of whisky. Whenever there was trouble and things threatened to get intractably stuck, the ‘bottle’ smoothed things out. Towards the end of the campaign, in one of the southern states, the programme threatened to capsize as the minister of health had decided that family planning had to take precedence and smallpox would now take a back seat. Dutta, who volunteered, was dispatched and he arrived, as he said, on the very day that the minister was to address the health department to chalk out a new strategy. ‘I arrived at his house at six in the morning and placed a whisky bottle on the table,’ said Dutta.

I told him: ‘Sir, the last time I met you asked me to come to you if I ever needed help. Here I am.’ The minister arrived at the meeting that morning and told everyone that the smallpox programme would take priority and go on as before.66

The ‘whisky bottle’ in Dutta’s narrative is a synecdoche of sociality. It is about fellowship and camaraderie in one context, where it dissolved hierarchy, brought subordinate and superior together and made for an esprit de corps. As he admitted, he was often forced to drink during the day with his special epidemiologists—especially the foreign ones—that he had to supervise and assess. Each felt it was a way of keeping the other in good humour. Elsewhere, it represented the innumerable personal bonds that he had cultivated—and could cultivate—allowing him to ‘jump levels’ in a bureaucracy where the principle of hierarchy was the mystical essence of its being.

If we treat Dutta, Basu and Tiwari as titular terms, then we have three orders whose intertwining produced an alchemy that alters in part the notion of a ‘charismatic adventure’. What we have is a virtuoso performance at three different levels. One in the form of an instrument, the imprest account, the other in the form of a convulsed bureaucracy—antechamber—which for a while was to swallow up, by the special powers given to it in the form of the NSEP, the whole health apparatus. And finally, the more familiar figure of the impresario, who by his own reckoning was the best troubleshooter. Each needed the other in the rhetoric and ritual of the thing called the global eradication of smallpox.

66 Dutta, ‘Personal Interviews’.
All three terms, apart from calling attention to the modalities of Instrument, Organisation and Person, encode a certain order of time: one that calls for action that is swift, decisive, comprehensive and focused. They point toward a particular conceptualisation of the disease. One that per force leads, if not to a model of war, at least to a theatre of operations, where a different set of rules, one that calls for a suspension of the routine and the 'normal', is brought into play. But it was through a coincidence of the necessary and the contingent that the Indian campaign took its final turn toward a state of grace. A turn, which like a healing crisis, plunged the health establishment into a crisis of doubt and self-appraisal; and the body politic into declamations that could be variously read as a sign of disgrace or of threat, or both.

Eruptions: Rhetoric of Disgrace and Conquest

The search strategy was so successful that by the middle of 1974, the incidence of smallpox in the endemic regions of Bihar, Uttar Pradesh, West Bengal and Madhya Pradesh began to rise dramatically. The health establishment was shaken and wanted to immediately put an end to what many thought was a mad project and revert to mass vaccination. In May 1974, a smallpox epidemic struck India. Struck is probably not the right word as, according to Dutta, it was largely engineered by the success of the search, if not virtually ‘detonated’ by the active search operations. In a strange coincidence between the expected and the contingent, there was another detonation. India chose that very month to surprise the world by setting off an atomic bomb at Pokharan. The blast at Pokharan coincided with the epidemic and the international press that had descended to cover Pokharan went to town over the twin threats. Here was India, simultaneously on the threshold of the nuclear club, and privy to what looked like the worst epidemic of the century. It was a decisive moment in Dutta’s narrative and marked, according to him, a turning point in the campaign. He recalled the case of a BBC report that so alarmed and disgraced the government that innovative rule breaking by both the WHO and the GOI, separately and in tandem, became the norm. A symptom of this sense of disgrace was Indira Gandhi’s message solicited by Nicolle Grasset, the head of WHO (SEARO). Indira Gandhi, already beset by JP’s civil disobedience movement, declared that ‘smallpox is a disease of economic backwardness’. This statement quite legitimately functioned, when directed inward, as a disgraceful confession and hence a call to arms, but it also functioned as a reminder and a threat of an embargo and loss of tourist trade (ibid.: 88). The overall effect was that it resulted in yet another organisational convulsion, dramatically redoubled efforts, led to even more search squads, jeeps, money and further WHO-GOI collaboration.

This rhetoric of disgrace had interesting consequences. In south Bihar, when it was pointed out to JRD Tata that Ranchi was the biggest exporter of smallpox, he

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67 Dutta, ‘Personal Interviews’.
68 Brilliant, The Management of Smallpox, p. 87.
69 Ibid.
delegated the task to some of his best management personnel and footed a sizeable bill as his share in the attempt to stamp it out. It also marked the welding together of a host of individuals and organisations that were sucked into the vortex of volunteering their services for the campaign. Throughout Dutta’s and Brilliant’s accounts, this image of disgrace and its immediate opposite—eradication—ostensibly brought all leaders ‘together’ with the same message: eradicate smallpox. Like Nicolle Grasset’s solicited message—in a rather unusual violation of WHO norms—virtually everyone across the board issued a call, said Dutta: JP in the midst of his civil disobedience movement; a Jain monk whose site near Gaya (the case of the Mahavir temple at Pawapuri cited earlier), which was under siege, with his flock refusing to be vaccinated as it went against their tenets, stepped in and told his flock to line up. The acme of the grand consensus that eradication seemed to engender in people across the board was the case of a tribal leader who was underground. He was persuaded to record a message asking his followers to be vaccinated (Dutta 1996). Its inherent legitimacy seemed to engender consensus, and allow for a suspension of normal rules in those cases (always proffered as few and far between) where resistance was encountered, as exemplified in the incidence at Pawapuri. In another incident, said Dutta, when an entire tribal village refused to be vaccinated, ‘we threw a barbed wire fence around them, posted guards for six weeks, and allowed the disease to smoulder and die’. We must pause here for a moment. If the epidemic and the concomitant language of disgrace plunged an already crisis ridden apparatus into further crisis, its fillip was a rhetoric of conquest. If Pokharan was the foil, the perfect exemplar of secretly and dramatically arriving at the threshold of a club, within the campaign, the ‘smallpox virus’ which threatened to blot out this moment of arrival in the sun, led to the organisers being infected by a zeal for its conquest. And any resistance that was met with, either organisational (within) or local (without)—that is, from a recalcitrant body population—was to be surmounted.

This zeal for conquest reached its acme when the NSEP personnel were infected by the ‘zero-pox virus’. An entire issue of Swasth Hind (April 1975) was devoted to the theme of ‘Smallpox Zero: Point of no return’. It marked the fact that the campaign had truly entered a nether zone from which there was no turning back; it had reached an inexorable momentum born of the fact that those with it had been infected by the possibility of its conquest. Coupled with the ‘Everest-effect’, says Brilliant—who was going to be the first to be rid of it; who was going to be able to declare a zero-pox status from amidst the last few straggling districts, states and nations—it led to dramatic moments in the annals of public health in India.

70 Dutta, ‘Personal Interviews’.
71 Ibid.
72 Ibid.
73 Ibid.
74 Brilliant, The Management of Smallpox.
75 Ibid.
Of Demons and Triage

While the suspension of the normal led to a series of administrative innovations, the final question that one needs to pose is, what held them together? What held it together was the fervour of a goal—the goal of total eradication. But the goal of total eradication was as much part of the earlier language of mass vaccination. What distinguished the earlier goal from the current one? Although mass vaccination had avowedly the same goal, we saw that it was essentially a language of defence. As both Tiwari and Basu put it in different contexts, it was an attempt to uniformly spread water on the assumption of an anticipated fire. But like the vaccine, the water never reached a host of places, and certainly not those where a fire often broke out. Hence, there were constant ‘flare-ups’ and, worse still, there was one pocket or another that acted as reservoir and link in a continuing chain of transmission.

The new strategy rested on a different premise. Its essential clarity came from the fact that smallpox was conceptualised as having a clear ontological status. It was both agent and demon. In India, posters of the smallpox as demon (reproduced below), to be put to death by a bifurcated needle, which evoked a trishul, were printed.

We must pause here to reflect on this particular configuration. Smallpox as a Being, in the figure of the Sitala, was a cultural given. But Sitala came in the dual role of a curse and a healing. She symbolised both an arrival and a departure; an impending departure brought about by a series of prescriptive and proscriptive acts, whose marks along with those of pox, she carried on her (see the image reproduced further on). In opposition to any neat division of a conception that could be viewed as either purely ‘ontological and local’ inviting engagement and battle, or of a conception that was ‘dynamic and totalising’ leading to a supposedly passive and expectant form of therapeutics (Canguilhem 1978), ‘Sitala worship’, which by the eighteenth century included the practice of inoculation, seemed to combine both.

In any case Sitala was far from a demon that called for a strategy of the kill. The campaign conceived smallpox precisely on those terms. The figure of the Pox was an amalgam of the (horned?) devil and a (ear-ringed?) rakshasa already half down but not out. He could resurface, and probably far more virulently like Mahisasura, if he was not quickly impaled by the trishul-bifurcated needle. The ‘impaler’ in underwear (evoking a loincloth), portrayed as a ‘wrestler’ from an akhara, rather than a God from high tradition, or a suave, ‘urban-modern’ figure, locates both agency and act in a mythic rural space (and in the realm of human possibility), mirroring, in part, the vaccinator as victor in the battle. And the bifurcated needle as trishul is the instrument of God (science/technology) in the battle against the demon.

Figure 1
Smallpox and its Eradication

A wall-sized poster, in the style of a cinema advertisement, depicts a hero slaying the smallpox demon with a bifurcated needle. This poster, also used in smaller sizes, was displayed widely in India to promote the reward for reporting a case of smallpox.

Sitala Mata is represented as a woman of commanding presence with large penetrating eyes riding a donkey. With one hand she holds up a pitcher full of water and with the other a broom. On her head she balances a basket full of grains. It has been the general belief that whenever Sitala Mata shakes her head, she spills grain all around and each grain turns into a smallpox pustule, leading to an outbreak of the awful disease. The victims survived if she used the water from her pitcher to clean the spill grain; they did not, if she used only the dry broom (Basu 1979).

Figure 2
Sitala Mata, the Smallpox Goddess
The demonisation allowed for the possibility of a model of ‘triage’. Invented on the war front as a sorting mechanism to decide which cases needed to be carried away by stretcher bearers to behind the lines and beyond, and their order of treatment, it called for a clear set of choices to be swiftly and unsentimentally exercised. In the imposed emergency of the campaign, the Pox-demon made for clarity and decisiveness: all that was needed was a sorting mechanism through which other diseases/conditions could be filtered out and take a back seat. The ‘Fever with rash’ register was the conceptual tool that allowed for the initial circumscriptio of the ambit of the disease and a mode of entry. The millions of fever with rash cases that were identified were a sorting mechanism, or a ‘system of triage’, through which smallpox would be identified and put away for good. And smallpox as demon was the acme of this logic.

Conclusion

By way of recapitulation and summary we can see that eradication was made possible by a radical reworking of earlier terms that had marked vaccination from the beginning of the nineteenth century. The abandonment of vaccination and returns, whose logical conclusion was mass vaccination, was a major conceptual shift. The twin terms of surveillance and containment with its focus on the early detection of cases and its containment, rather than increasing the reach of vaccination, marked the new strategy. For a somnolent health apparatus used to vaccination targets, this radical turnaround was wrought by an imposed language of crisis and emergency, with the leitmotif of a charismatic adventure not only of virtuosos, but of a radically restructured health bureaucracy that made systematic rule-breaking a norm. A model of triage, captured rather well in the recasting of smallpox from a deity to a demon, made for a singularity of intent and its attendant imagery of the kill. The language of crisis and charisma and the accompanying rhetoric of disgrace, goading everyone to rise from a state of fall, allowed the state to see itself as being privy to a grand act of ritual purging for which any price was worth paying. This leaves us with two models of consecration in the passage from the eighteenth to the twentieth century. If the eighteenth century was marked by an individualised ethic of consecrating the self, as a strategy to both solicit and purge in an attempt to mitigate the disease, the twentieth-century imagery locates the object to be transformed in the Other. Here, we are no longer part of a regimen, of an order of seasons, in short a cosmos. The self-imposed regimen, which leads to a different order of community and public space, is rendered unnecessary with the advent of vaccination. But at the moment of transition, when both its reach and efficacy are under question, it calls for a public ethic which, under the sign of collective welfare, often leaves individuals who

contract the disease in a quandary. Here, on a historical curve, by locating the problem in a recalcitrant and problematic collective body, a hiatus is wrought between the discourse of the state and the thing to be transformed 'out there'. This logic is carried forward into the twentieth century. An etiological conception, and the palpable agent in the form of a virus, whose local variant is the deity recast as demon, makes for a singularity of intent and the attendant imagery of the kill.

But this transformative motive is carried forward, or made possible, only with the rediscovery of village and community as hallowed space, and the individual patient and his segregation as a necessary tool in the armamentarium. Once again, rather than merely focusing on vaccination exclusively, it approaches to being a moment in the attempt to extirpate the pox. This re-inscribing of the community and the individual, often perversely and from the outside, is what sets the campaign apart. Personal charisma, the necessity for isolation, enumeration and vaccination, the posting of watch-guards, and all of these with 'local support' either by entreaty or threat, conjuring up images of both violence and arcadia, together go up to make an active engagement with the other. What makes this possible for the transformers is the language of crisis and a charismatic adventure as a corollary, which promises redemption both for the self and the other. Its seemingly inherent legitimacy (marked by the visibility of the disease and the 'fear' of leaving one marked and visible for ever?) makes persuasion, ruse and excess both legitimate and 'understandable' tools. An accompanying rhetoric of disgrace, given by the (very) stigma of the disease, and a comparative set of tables, between the primary health centres, the districts, the states and nations, which is made to unfold week by week and month by month in a global drama, goading everyone to rise from a state of fall, allows the state to see itself as being privy to a grand act of ritual purging. In the bargain the state, and super-states like the WHO, not only legitimate and renew their contract but consecrate themselves.

The case of smallpox appears as a particular instance of the general principle of the play between individual and collective, and state and citizen, which, when it is globally mapped, as in the case of tropical medicine, turns into a Manichaean division between a Self and Other. In fact, this Manichaean division and the fear that it invokes leads, as we have witnessed, to a model of imports and exports and forms both the motive, the calculus and the theoretical fulcrum for the global eradication of smallpox.

Contemporary global eradication programmes, like the polio campaign currently underway, are built on this binary division where the tropics is what defines the temperates and also what threatens it: an Other that functions as a necessary point of reference in an attempt to civilise the Self. As Toni Morrison has pointed out in the context of America, notions of justice, liberty, truth and civility were to be fashioned in the necessary shadow of slavery, where the Other functions as referent

and experiment; as threat and projective vessel. Hence, it is not surprising that natives, variolation and variolators are often made to swing between the ends of worship, gullibility and vested interest. In opposition is the vaccinator who is the Knight Errant, first on foot, then on pony, and finally in a jeep with his lance(t). Here, the vaccinator administers the vaccine and something else. And it is through administering and the attempted shaping of the Other that the Self is constantly constituted, cultivated and fashioned.