



INTIMIDATION, COERCION AND RESISTANCE IN THE FINAL STAGES OF THE SOUTH ASIAN SMALLPOX ERADICATION CAMPAIGN, 1973–1975

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Abstract—This paper reviews episodes during 1973–1975 when American physician-epidemiologists in South Asia, working under the auspices of the World Health Organization, intimidated local health officials and resorted to coercive methods in the final stages of the Smallpox Eradication Programme. While intimidation and coercion were successful in the short-run in ensuring disease containment, they evoked health-professional and popular resentments, and the long-term effect may have been to foster negative attitudes toward subsequent vaccination campaigns. At the very least these episodes suggest a need for paying attention to actual and perceived abuses when global health measures are introduced from 'above' into regional settings.

Key words—smallpox eradication, coercion, South Asia

Most people world-wide actively seek, or can be persuaded to accept, official measures of mass vaccination that aim to control or eradicate disease. Instances of opposition are uncommon in the literature, which tends to merge expressions of resistance into the broader phenomenon of "non-compliance" [1]. Resistance in the sense of overt acts of refusal appears less common in the present than in the past, when vaccination campaigns triggered both street riots and sustained struggles to overturn compulsory vaccination laws in nineteenth-century America and Europe. Yet the potential for resistance is always present, because encounters with government vaccinators are never about immunization alone. Public health measures derive their authority from the police powers of the state, and people do not lightly offer themselves (or their immune systems) to government, even when its authority is legitimate. Hence, while compulsory vaccination has been one strand in the composition of state sovereignty, anti-vaccinationism has played a role in the development of Euro-American traditions of civil disobedience [2]. Mass vaccination campaigns may also provoke resistance based less on secular concern than on religious belief: some will always assume that God offers better terms than the Ministry of Health, a credo that turns acquiescence in vaccination into heresy. Finally, when a majority of the members of a privileged class, sect, race or region, endorses mass vaccination, the minority may resist it in expression of political fear unrelated to fear of epidemic diseases.

These remarks look to the social, religious and political characteristics of target groups as predictors of likely opposition to vaccination, but is it possible

that health officials themselves evoke resistance simply by pressing the public too hard? Can organizational features of the health care system itself evoke resistance among the lower ranks of health care personnel [3]? In this paper I review occasions during 1973–1975 when physician-epidemiologists in South Asia, working under the auspices of the World Health Organization (WHO), intimidated local health officials and resorted to coercive vaccination in the final stages of the Smallpox Eradication Programme (SEP). Both intimidation and coercion evoked resistance and therefore interfered with the smooth functioning of public health immunization. These physician-epidemiologists were all Americans who had been recruited by the U.S. Centers for Disease Control and Prevention (CDC). All of them have subsequently pursued public health careers, but only one has maintained a professional link to South Asia. Several now express regret over their participation in patterned acts of intimidation and coercion. Evidence for these statements comes from interviews, published statements and journals kept at the time.

I am aware that in raising such issues I may be giving them undeserved prominence. The extent of intimidation, coercion and resistance in South Asia in 1973–1975 cannot be documented quantitatively and may have been negligible, although I doubt this was the case [4, 5]. I might also be said to be diverting attention from the great efforts made by CDC personnel on behalf of South Asians during those years. An ancient, deadly, often blinding disease, normally prevalent in numbers measured in tens of thousands of cases per year, was eliminated as a result of SEP personnel's hard work supported by brilliant

epidemiological analysis and innovative organizational measures. Hundreds of expatriates disrupted their own careers for no other reward than later to be able to say that they had helped eradicate smallpox—not only from South Asia but also from Africa, South America and Southeast Asia [4–8]. Nothing I write can detract from this remarkable record of success, and my motive here is simply to document the fact that heavy-handed methods were sometimes relied upon in the final stages of the eradication campaign in India and Bangladesh. While successful in the short-run, these methods underlined the divide between foreign and host-country health professionals and may have widened the gap between the latter and the public. Thus the long-term effects may have been negative for other health campaigns that require official, professional and popular cooperation for success.

THE SMALLPOX ERADICATION PROGRAMMES IN INDIA AND BANGLADESH

In India a large health bureaucracy, reaching from New Delhi down to state capitals, district headquarters and sub-divisional towns, and from there to multi-village blocks and nearly 560,000 villages, was put in place 45 years ago to carry out disease control activities as directed by the Ministry of Health. The Smallpox Eradication Programme (SEP) was established inside this structure in 1962 with the goal of immunizing 80% of the population. At that time SEP managers assumed that at the 80% coverage level smallpox transmission would cease. By 1964, however, after 80% had in fact been achieved in some states, outbreaks continued to occur. It was then recognized that mass vaccination had in fact been concentrated on the most easily accessible groups, such as schoolchildren (many of whom were vaccinated repeatedly); vaccination had now to be carried to slum dwellers, migrant workers, poor fishermen and the inhabitants of numerous villages in less accessible regions. From 1964 to 1967 a mass vaccination goal of 100% coverage was set, with emphasis on the smallpox-endemic states of Bihar, Madhya Pradesh, Uttar Pradesh and West Bengal. A review of the programme in 1967 by a joint SEP-WHO team concluded that, because of serious organizational problems, bad epidemiological data, the low productivity of poorly paid and badly supervised vaccinators, and because of technical problems with the cold storage of liquid vaccine, the incidence of smallpox was rising, not falling. It was further discovered that only 10% of the actual cases were being reported, the remaining 90% being concealed by lower-level health personnel or otherwise lost to knowledge because of a cumbersome reporting system. From 1968 to 1972, during which time the WHO global eradication campaign was inaugurated, the Indian SEP undertook a wholesale administrative shake-up; it renovated reporting, instituted the production of

freeze-dried vaccine, and shifted emphasis to the detection of outbreaks and their containment by mobile vaccination teams. Numerous outbreaks occurred, however, and between 1970 and 1973 more than 130,000 cases were reported. By any measure India in 1973 was still the world's largest reservoir of smallpox [4, p. 20; 6, p. 719].

In the east of the Indian subcontinent where the Ganges and Brahmaputra rivers and their tributaries form an alluvial delta, Bengal has been an endemic focus of smallpox for centuries. Up to the time of the 1971 civil war in East Pakistan (later Bangladesh), the closely guarded border between that province and India had been an effective barrier to smallpox. In August of 1970 the East Pakistani smallpox programme, employing mass vaccination and strengthened surveillance methods, succeeded in halting transmission throughout the province, and no cases of the disease were detected during 1970–1971. After the civil war, smallpox was reintroduced in late 1971 and early 1972 into the new nation of Bangladesh (i.e. former East Pakistan) as Bengali refugees streamed back from Indian border camps. Subsequent massive outbreaks in Bangladesh were considered by WHO to be extensions of a common South Asian endemic smallpox zone, and eradication was not achieved in Bangladesh again until late in 1975 [4, p. 86; 5, p. 24; 6, p. 807].

Beginning in mid-1973, an intensified eradication campaign was launched in both India and Bangladesh under the general guidance of the WHO, which set up technical units and appointed expatriate epidemiologists from several countries to work in close coordination with national SEP authorities. The WHO epidemiologists convinced the two health ministries to shift their investment away from routine mass vaccination toward ever more focused programmes of surveillance and containment in endemic districts, especially during the cold months from October through January when smallpox always fell to its lowest incidence. Staff at all levels of the health systems were pulled off other projects to support smallpox eradication. The reporting systems were improved, but it was active surveillance—aggressively seeking out cases instead of waiting for them to be reported through written notification systems—that became the key measure. Surveillance teams were equipped with jeeps and motorcycles so that they could roam near and far searching markets, schools, pilgrimage sites, tea-shops and *bustis* (slum settlements) for cases. Repeated village-to-village and then house-to-house searches were launched in both countries. Cash rewards for pinpointing hidden cases were offered, first to the public and then to the health workers as well. At the same time ever more rigorous containment measures were instituted. Motorized teams rushed to the scene of outbreaks to backstop local vaccination personnel. When active cases were located, the patients were either confined to their homes with guards or put into secure isolation hospi-

tals to prevent additional contacts; local vaccinators were hired to immunize co-villagers regardless of their prior immune status. A huge monitoring effort was made to track all known cases and contacts, and supervision was exercised at every level of the SEP hierarchy. Paperwork tasks increased and required vaccinators and their supervisors to keep a variety of records and registers up to date.

Despite these much more coordinated and stringent measures, the SEP came close to collapse in India in the first six months of 1974. There was an explosion of outbreaks in Bihar and Madhya Pradesh, and the largest number of new cases anywhere in the world during the prior six years was recorded in May of 1974. Arrival of these data coincided with grave financial problems in the Indian SEP, the onset of regional railroad strikes and an outbreak of widespread political disturbances. There was also a serious disagreement between the WHO advisers, on the one side, and India's Director General of Health Services and the Bihar health minister, on the other; these two officials had lost faith in surveillance/containment methods and advocated a return to mass vaccination [6, p. 765]. Similar high-level calls for mass vaccination came from Bangladesh early in 1975 [6, p. 835]. In response, WHO leaders made desperate efforts to locate additional funds in order to bring more expatriate epidemiologists into South Asia in an effort to shore up the surveillance/containment organization. After June of 1974 the number of foreign epidemiologists in India doubled to about 100; half of these were sent to Bihar on short-term assignments. In Bangladesh, where the SEP campaign lagged Indian arrangements by a few months, new short-term WHO staff began to arrive from abroad in strengthened numbers early in 1975; approximately 40 expatriates were in the country throughout the year. WHO epidemiologists were equipped with jeeps, gasoline and large sums of cash to hire personnel, print leaflets, reward the discovery of outbreaks and make on-the-spot arrangements for surveillance and containment tasks [6, pp. 757, 773, 777; 5, pp. 206, 214].

THE CONTEXT OF COERCION AND THE LOGIC OF RESISTANCE

Most of the several hundred WHO epidemiologists who served in South Asia in the 1970s stayed for less than six months. In theory they had a merely advisory relationship with Indian and Bangladeshi SEP personnel, but in fact they assumed responsibility for most eradication activities once they were assigned to rural districts. Expatriates differed in their degree of comfort with the assignment; some had never worked in rural Asia before, while others were accustomed to the conditions and felt right at home. All were aware, however, that the global eradication effort was hanging in the balance in South Asia.

Coercion arose during containment operations,

when expatriate epidemiologists accompanied by vaccination teams went into villages after surveillance had detected smallpox outbreaks. Coercion was justified by containment, but the containment concept was modified at least twice. Initially it simply meant vaccinating the known contacts of active smallpox cases; the names of contacts were elicited from patients by trained interviewers—classic public health contact-tracing. These interviewers also determined the immune status of the contacts, who would be excused from vaccination if they could demonstrate prior successful smallpox immunization (e.g. by showing a characteristic scar). These interviews could be slow and were obviously hampered when smallpox patients were too ill to speak or died. In time WHO epidemiologists, few of whom spoke local languages and who were dependent on others, disparaged the interview method, arguing that even when it was well done it was not foolproof. Containment was thus redefined in 1973 to mean that *everyone* in a village where active cases of smallpox had been detected had to be vaccinated, regardless of his or her prior immune status. This put an end to dilatory interviews—and indeed to the need to converse with villagers at all. The turn from an interactional to a purely locational definition of containment has been described by Stanley Music, a senior WHO physician-epidemiologist from CDC assigned to the Bangladesh SEP during 1973–1975:

The standard containment framework, limited as it [was] to known contacts, was therefore too narrow to be sure and took far too long to complete . . . we wanted to restructure containment so that it would not be highly dependent upon a well-motivated and talented interviewer. . . . For these compelling reasons we abandoned the specific contact approach to containment and adopted in its stead the concept of focally intense ring vaccination. Translated into the context of Bangladesh, the ring becomes the village. Based on the observation that the Bengali village in its entirety functions as a loose extended family, and also on the assumption that most if not all of the actual contacts are in this readily defined population, the village became the outbreak containment unit. The village is smallpox's least common denominator in rural Bangladesh, and village containment is a logical extension of the *one infected village equals one outbreak* concept. The minimum containment target became the entire population of any village with even one case of smallpox [9].

In the last phase of the eradication campaign, containment was again defined to mean the vaccination of everyone living within a 1–1.5 km radius of an outbreak.

The actual application of containment so defined, however, often produced chaos in the affected villages. In Music's words,

The initial stage in the evolution of a coherent containment policy was marked by an almost military style attack on infected villages. . . . In the hit-and-run excitement of such a campaign, women and children were often pulled out from under beds, from behind doors, from within latrines, etc. People were chased and, when caught, vaccinated. Many misunderstandings arose and tempers often flared in these heated situations. Attempts were made to secure the

cooperation and "blessing" of village headmen, thereby putting social pressure on the villagers to stand their ground and accept vaccination. Still, however, some form of minor chaos was the rule, as headmen's authority did not extend into individual's homes. . . . Known infected villages were revisited—often repeatedly—to check for new cases and left-outs. Almost invariably a chase or forcible vaccination ensued in such circumstances. . . . We considered the villagers to have an understandable though irrational fear of vaccination. . . . We just couldn't let people get smallpox and die needlessly. We went from door to door and vaccinated. When they ran, we chased. When they locked their doors, we broke down their doors and vaccinated them [9, p. 35; 10].

Containment teams generally had their way, and sustained resistance (other than flight) was infrequent. When resistance did occur, it took various forms, ranging from mild avoidance to violent protest. The teams, always fearful that new outbreaks would undo their hard work, met resistance with coercion. The expatriate WHO advisers initiated it; they felt uniquely obliged to demonstrate to the subordinate vaccination staff that no exceptions could be allowed. The containment rule was *vaccinate everyone*. Still, advisers were haunted by the conviction that when they turned their backs, Bangladeshi and Indian staff relaxed their vigilance. As Music noted, "when there were no expatriates, containment quality was highly variable; and herein lay its major limitation: there were more outbreaks than there were expatriates" [9, p. 37].

The following accounts document a range of coercive encounters involving American WHO advisers in Bangladesh and India between 1973 and 1975. In all but the first and last cases the logic of resistance is verbalized, giving insight into the resisters' motives. The first three cases derive from Music's thesis, previously cited [11].

Case 1. Bangladesh 1973

A case of smallpox had been detected in a village. Music, on an inspection visit, discovered a lapse in containment procedures—a village health worker (the lowest ranking position in the Bangladesh health system) had failed to give an old man a vaccination.

[A] pulmonary cripple with what was probably far-advanced tuberculosis [had been left out]. The health worker had not wished to disturb this obviously feverish man with a vaccination and had not even told the Sanitary Inspector [a more senior but still local-level health official] about him. I had stumbled on him by going from house to house to check vaccinations myself. He accepted vaccination readily if unenthusiastically [9, p. 47].

Resistance here was *divided* between the village health worker, who concealed the probable TB patient's unvaccinated status, and the patient himself. The latter did not voice his opposition, and in a sense, the health worker presented it for him, asking implicitly, "Is it not grotesque to spare an old man smallpox but allow him to die of tuberculosis?" The WHO adviser swept aside this implicit argument and vaccinated,

coercion here taking the mild form of disregarding the old man's and the health worker's preferences.

Case 2. Bangladesh 1973

In a second case, resistance took on a more active quality. Again, the narrator is Music and the scene is rural Bangladesh during 1973:

[She was] an old woman who wore a dirty grey plain cotton sari over her gaunt and emaciated body. The [Sanitary Inspector] said that she wanted food and would not take vaccination unless someone gave her food. She was a beggar by "profession" but the times had been hard and she was frankly starving. I entered her house—a jute-stick and mud hut with thatch roof in poor repair—and asked her to take vaccination. She asked if I had brought her any food. I said no. She refused vaccination. I pleaded with her and took her outside to see the child two houses away only minutes from death [from smallpox]. I said that if she remained unprotected, she stood a good chance of getting smallpox. She [said she] had never been vaccinated in her life. She said that if I didn't care whether or not she died of starvation, why should I care if she got smallpox! After explaining that she was a risk to others in villages where she might beg, I told her that I had no choice but to vaccinate her with or without her consent. I promised to arrange some food for her and then vaccinated her myself. . . . I felt it was important to get 100% vaccination and drive home the point that there could be no exceptions. With an eye to how the SI [Sanitary Inspector, a *thana*-level health worker] and his staff would regard this situation, I felt compelled to vaccinate her there and then with or without her consent [9, p. 46].

Here the woman verbalizes her reason for refusing vaccination: if *you* don't care whether or not I die of starvation, why should *I* care about smallpox? Her argument represents a common response to narrowly sectoral disease campaigns among the poor. On the other hand, her confidence that she could not be infected is anomalous, even fatalistic. It is notably difficult to convince someone to take extra precautions against a long-familiar hazard, and despite the WHO adviser's dramatic gesture toward an active case down the lane, she did not believe she was in danger. She unashamedly bargained her immune status for food, and coercion in this case lay in taking advantage of her hunger [12].

Case 3. Bangladesh 1973

A third case based also on Music's experience in a Bangladesh village in 1973 reveals a much higher level of coercion in response to forthright resistance.

[A man refused] to let anyone into his house or to come out to be vaccinated. When he left his house he locked the women and children inside with a padlock. When he came home he barred it from within. The [Sanitary Inspector] had tried three times to convince the family to take vaccination. I waited for the man to come home and when he did I told him that he had to take vaccination and to let his wife and children be vaccinated. He refused, went inside and barred the door. I broke the door down and vaccinated—with a struggle—every member of his family, including the man. He was very angry and told me he was going to initiate a case against me. Approximately three months later I was told by the local magistrate that a case had been registered against me but that it had been thrown out of court [9, p. 46].

Blazing anger distinguishes this response from the previous two; unlike the TB patient and the beggar-widow, this man felt himself empowered to resist. He not only contested the WHO adviser personally but on behalf of others, especially his female dependents [4, p. 112; 5, p. 179]. Locking up his dependents was a mechanical approach to a jurisdictional conflict: patriarchal authority was being pitted against the state. The man saw himself in the Bengali role of master of the house (*karta*), that is, the responsible male who controls money, food, work and the behavior of his dependents. The WHO adviser, however, read this behavior as ignorance and cruelty; he felt obliged to set an example for the Bangladeshi vaccinators, lest containment discipline break down. Thus he smashed the door. The fact that the man subsequently began a court case indicates his continuing confidence that right was on his side, and it is not clear whether the case was quashed for lack of merit or because the defendant was a powerful foreigner. Throughout Music's narratives there are hints that local vaccinators brought WHO advisers forward like pieces of artillery to be discharged against resistant villagers whom they did not care to challenge directly.

Case 4. Bihar, India 1975

The fourth case refers to an unusually violent encounter in eastern India in 1975 in an aboriginal village in the Jharkhand region of Bihar. The narrator, Lawrence Brilliant, was a WHO physician-epidemiologist who had married an Indian woman and was fluent in Hindi [13].

In the middle of the night an intruder burst through the door of the simple adobe hut. He was a government vaccinator, under orders to break resistance against smallpox vaccination. Lakshmi Singh awoke screaming and scrambled to hide herself. Her husband leaped out of bed, grabbed an axe, and chased the intruder into the courtyard. Outside, a squad of doctors and policemen quickly overpowered Mohan Singh. The instant he was pinned to the ground, a second vaccinator jabbed smallpox vaccine into his arm. Mohan Singh, a wiry 40-year-old leader of the Ho tribe, squirmed away from the needle, causing the vaccination site to bleed. The government team held him until they had injected enough vaccine; then they seized his wife. Pausing only to suck out some vaccine, Mohan Singh pulled a bamboo pole from the roof and attacked the strangers holding his wife. While two policemen rebuffed him, the rest of the team overpowered the whole family and vaccinated each in turn. Lakshmi Singh bit deep into one doctor's hand, but to no avail [14].

After seeing his family vaccinated, Mohan Singh addressed the medical team and his fellow villagers, who had been assembled, in the following terms:

My *dharma* [moral duty] is to surrender to God's will. Only God can decide who gets sickness and who does not. It is my duty to resist your needles. We must resist your needles. We would die resisting if that is necessary. My family and I have not yielded. We have done our duty. We can be proud of having been firm in our faith. It is not a sin to be overpowered by so many strangers in the middle of the night. Daily you have come to me and told me it is *your dharma* to prevent this disease with your needles. We have

sent you away. Tonight you have broken my door and used force. You say you act in accordance with *your* duty. I have acted according to mine. It is over. God will decide [14].

Brilliant admits to being troubled by the attack on Mohan Singh's house [15]. At the time it was justified on epidemiological grounds. A serious outbreak of smallpox had occurred in the nearby industrial city of Jamshedpur, and one case had been traced to the Ho village [16]. The containment rules were clear. Nonetheless, in recognition of Mohan Singh's status as chief and the obvious advantages of enlisting his authority, he had been given time to change his mind. But Mohan Singh clung to a view of disease that struck the rationalist-modernist health workers as profoundly archaic. The village was thus forcibly vaccinated in a military-style operation.

This display of force—massed policemen and jeeps at midnight—gives the account a peculiar vividness, but there is no difference in principle between this and earlier cases: local norms have no standing and are swept away. In repeating Mohan Singh's views, Brilliant did not defend a tribal patriarch who would have condemned his dependents to death or blindness from smallpox. Instead, he was struck that Singh's objections were explicitly and profoundly religious. Religious opposition to vaccination is bound to give pause to Euro-Americans whose own public health traditions include special arrangements in matters of conscience. In saying that vaccination was not in his dharma, Singh invoked the most distinctive principle in Indian moral thought. Dharma is regularly appealed to in South Asia in order to explain why a person must do, or must not do, any number of things. Dharma links personal volition to the social natural and transcendent orders, and its invocation when acceding to or resisting another's desire is understood to have the sanction of destiny [17]. When Mohan Singh failed to drive off his midnight visitors, he could only explain their intransigence by assuming that they too were under the compulsions of dharma.

Case 5. Bihar, India 1974

A fifth case illustrates that coercion could evoke personal violence against an expatriate WHO worker as a calculated act of retribution. The speaker here is T. Stephen Jones, who describes an incident in rural Bihar in late 1974:

[Q] What did you do?

[A] I was doing good. I was religiously fervid, I was a crusader. . . . There was a clear commitment to working on something that was for the benefit of people. . . . I became so convinced of that, that I did some very excessive things in the name of righteousness. One of the rules was that *everybody* gets vaccinated. I was awful in my conviction of purity of purpose—in breaking down doors and vaccinating crying women, etc.

[Q] Did you break down doors?

[A] Yes . . . And they were very solid doors! A typical thing was, someone [a health worker] would [come to me and] say "we have someone here who refuses to be vaccinated, will you help us out?" Part of that was that I was a white man in that society, and I could do things that others couldn't

do . . . and get away with it. Although I didn't always. . . . In December of 1974, I moved on from Muzzafarpur to another part of Bihar On a full moon night I went to investigate a report of a case of possible smallpox near an old outbreak that was just about to be written off. I went into this household; there was a young child or baby with obvious chickenpox. But the rule at that time was that you vaccinated the household anyway, and for a good reason—sometimes you make a mistake in the diagnosis of chickenpox. There was a 26- or 27- or 28-year-old chubby, somewhat effeminate man there who refused to be vaccinated. So I vaccinated him.

[Q] How did you vaccinate him?

[A] By force I just held his arm and vaccinated him. He was crying and upset. Whimpering on the floor. Mean son of a bitch I am. But I knew that I was doing the right thing, of course!

[Q] Did you get in trouble?

[A] Yes.

[Q] Did he sue you?

[A] No, no. Much more direct than that. And much more in the traditional way a traditional society deals with that. Sometime thereafter, I'm not clear exactly how long, there was some noise outside [the just-vaccinated man's] house. I was working at that time with a PMA [physician's medical assistant] who I had found and trained and who was absolutely wonderful. So I said to him, "Are we in difficulty?" And he said, "Yes." And we went outside and there were a whole bunch of the villagers, and the story was . . . that we were reported to be robbers, thieves. And they began pushing my PMA. It was an aggressive crowd, no question. There were 20 or 30 men with bamboo sticks, *lathis*. With a brass fitting on the end of the *lathi*. So they pushed him, and I set myself between him and the people who were pushing him, for that was my experience—that I was invulnerable. And then I felt dizzy. And then I sort of crumpled down on the ground and found that I had blood in my eyes and a laceration on the top of my scalp. And my PMA was lying over me, and protecting me. Ram Chandra Pandey, a wonderful man! Then some schoolteacher appeared after a while and came in under the pile and said, "Who are you?" And I said "I'm working with WHO." I learned a real lesson from that [18].

Jones is remarkably candid in this account, which shows hints of racial, cultural and masculinist arrogance seeded into the epidemiological explanation of his actions. It also shows him to be aware that his psychological state at the time was one of messianic conviction; this state gave him a sense of personal invulnerability that swept away all sense of restraint.

Shortly after smallpox eradication was completed in India and Bangladesh, summary reports were prepared and published by the WHO's Southeast Asia Regional Office. These acknowledge there had been resistance to vaccination, and that resistance had evoked coercion from SEP staff, but they minimize the significance of both. In the Indian report, for example, in a section devoted to "cultural and religious resistance," specific groups are noted as having posed problems during containment operations—"individuals willing to be vaccinated only by members of their own caste," "female members of strict Muslim families" and "tribal and minority groups." The same report observes that resistance was overcome in most cases by "patience, teaching, kindness and consultation with community leaders before vac-

cination started and *only as a last resort, by insistence*" [4, p. 112]. Surely "insistence" is a euphemism for coercion. Overall, however, the Indian report takes the position that

During the course of smallpox eradication activities, enthusiasm and acceptance of vaccination has been the norm and resistance to vaccination the exception. During the Intensified Campaign [from 1973 on] no strong cultural or religious resistance to vaccination sufficient to have any influence on the programme was encountered . . . less than three percent of the people, usually females in older age-groups (around 70 or 80), might be expected to refuse vaccination during a containment operation. They were eventually vaccinated after persuasion and motivation by senior staff, such as a physician or an international adviser. In reality, resistance to vaccination in India remained a limited phenomenon without substantial influence on the programme [19].

Clearly, the Indian authors hold two views simultaneously: resistance was insignificant, but when it became significant it was overcome by coercion.

Similarly, Joarder *et al.* report from Bangladesh that

There was no organized resistance to vaccination in Bangladesh, on either social or religious grounds, but some traditional religious practices, for example the strict seclusion of women, at times prevented a complete coverage of the population. In most cases lack of cooperation was due to an ignorance of its benefits [5, p. 179].

The statement is correct in stating that *organized* resistance—in the sense of party-political or mosque-based opposition to immunization did not occur; yet we know from Music's account that there was spontaneous local-level opposition to containment methods. As in the Indian report, the Bangladeshi authors convey both the presence and absence of coercion:

The development, between 1973 and 1975, of a *rigidly enforced* and effective containment system was . . . crucial to success. While previously, mass vaccination of the people living in an affected village had been attempted, the new system depended on the more selective approach of patient isolation and vaccination of all residents and visitors to the household. When a smallpox outbreak was discovered, all cases were *rigidly confined* to their own houses and locally employed "watchguards" were posted at all doors to prevent infectious persons from leaving or unvaccinated persons from entering. When the patients were safely isolated, all persons living close to the affected house were enumerated. Vaccination of possible contacts was *energetically pursued* [4, p. 310].

It seems likely that the actual situation in both India and Bangladesh at the time was this: resistance to immunization was never *allowed* to become a significant factor because containment procedures were coercively enforced. Coercion was deemed particularly appropriate if resistance could be attributed "traditional religious practices," a policy that would hardly be tolerated in the rights-saturated societies of the North.

INTIMIDATING HOST-COUNTRY STAFF

Most of the American physician-epidemiologists who worked for WHO in South Asia during 1973–1975 were recruited on short-term contracts from U.S. medical and public health programmes. They agreed to participate in the eradication campaign because they were idealistic and wanted to be a part of the achievement of a historically significant public health goal. Few, however, had any international health training or experience, and fewer still realized what it would mean to work side by side with South Asian colleagues seven days a week for several months under difficult field conditions. While many firm friendships were cemented between Americans and South Asians during the eradication campaign, a not uncommon pattern was for members of each group to become bitter critics of each other. As might have been predicted, significant cultural and professional differences divided the Americans from their South Asian counterparts. These differences became more apparent in the difficult months of 1973–1975 when financial, administrative and political problems tested the limits of the surveillance-containment approach. In late 1974 and early 1975, more and more American physician-epidemiologists arrived in India and Bangladesh, eventually becoming the largest expatriate contingent. Though always denominated “advisers,” they were granted overall authority for the eradication programme in disease-affected districts. Like other WHO epidemiologists, they were provided with fuel and transport and given cash resources that were normally unavailable to Indian and Bangladeshi physicians, let alone lower-level health workers. At a deeper level, the professional norms of public health work in India and Bangladesh differed sharply from those in North America. For example, the Americans defined every smallpox outbreak as a health crisis and expected their South Asian colleagues to devote themselves to SEP work with flat-out intensity, all day every day. Smallpox was the only target in their sights. In contrast, many of the South Asian SEP staff had seen outbreaks of disease for many years; they had frank doubts about eradication in general and surveillance-containment in particular. Some objected to being yanked off other local-level health programmes, such as malaria control and family planning, while others appear to have been rattled by the arrival in their districts of demanding expatriates. The South Asian SEP staff members were well aware that there had been top-level disputes about the merits of surveillance/containment vs mass vaccination. The SEP became a complex cultural and political arena between 1973 and 1975 as the incidence of the disease fell and rose and fell, and the willingness of the Americans to use coercive methods where Indians

and Bangladeshis tended to hold back added to the complexity. It was under these conditions that intimidation of host-country SEP staff by Americans occurred.

The experience of Joshua Pryor

A young epidemiologist named Joshua Pryor arrived in New Delhi at the end of August of 1974 after a long flight from the States [20]. In the U.S. Pryor's training had been focused on non-infectious diseases, and he had never seen a case of smallpox. Like many others recruited to India by the WHO, Pryor had served for two years in the U.S. Public Health Service as an epidemic intelligence officer of the Centers for Disease Control [7, p. 98].* He differed from the rest in at least one respect; as he began his flight to India he began a personal diary into which he entered detailed notes throughout his tour [21].

Four months before Pryor's arrival, in May of 1974, smallpox in India had peaked at more than 8600 outbreaks in a single week, and the fate of the whole programme seemed to be hanging in the balance in a few densely populated paddy-growing districts along the Ganges River in the state of Bihar. Since then the numbers had been brought down, but the WHO strategy of searching for and containing outbreaks, rather than mass vaccinating the populace, was being openly debated in New Delhi; anxious WHO managers decided to throw in foreign epidemiologists to rally the eradication organization at the local level. Smallpox, they bravely declared, would be eradicated from India by the end of 1974. In fact it would take an additional five months until May of 1975 before it disappeared; the goal of zero-smallpox was delayed in Bangladesh until the following November [22].

On his first night in India, Pryor and other newly-arrived physician-epidemiologists stayed at the Lodhi Hotel, a modest New Delhi establishment, where the dining room served vegetarian meals only and it seemed prudent to drop Halazone tablets into the water. The following day was spent “masochistically” driving 150 miles to and from Agra to see the Taj Mahal and other sights. For the first time Pryor plunged through Indian crowds and came face to face with beggars, street vendors and touts. It was warm and noisy, and strange animals—buffaloes, elephants, camels—appeared everywhere. As is usually the case with inexperienced foreigners, Pryor was overwhelmed by the Indian surface, confiding to his diary that, although it had been “touristy and tiring,” it was “probably the most remarkable day I can recall.”

Early in September Pryor began the first of two days of orientation at WHO headquarters in New Delhi. Dr William Foege, chief CDC epidemiologist in the country and the head of the WHO team, gave the lectures. The picture, as Pryor recorded it, was fairly simple: smallpox had been contained at last in the hugely populous state of Uttar Pradesh, but there were 2600 active outbreaks in neighboring Bihar.

*The CDC was the principal source of short-term American epidemiologist recruits for both India and Bangladesh.

Each WHO epidemiologist would be assigned an affected district, where he was to strengthen the search and containment procedures, paying particular attention to record-keeping and supervising all aspects of the campaign. His role was that of adviser; he was there to backstop the work of the permanent SEP staff, mostly members of the Indian health services. The following morning Foege and others drilled the recruits in hypothetical problems that refreshed their epidemiological skills. Everything else they needed to know, they were told, would become clear on site. Pryor and a new acquaintance, Dr Ivan Weissman, were assigned adjacent districts and were to replace two other WHO epidemiologists.

At the end of the orientation session, Pryor and Weissman were each given 9000 rupees in travelers checks and 5000 rupees in cash to purchase soap, soup, peanut butter, bedding, notebooks, a mosquito net, maps, bug spray, an anti-venom kit and other recommended items before departing the next day by train for Patna, the capital of Bihar. On September 4th, the morning of departure, Pryor began to have stomach cramps on the way to the Delhi rail station and felt himself "pre-clinical." The sights, sounds and smells of the station oppressed him, and he later noted that "as the train pulled out precisely on time . . . I had that sinking feeling of final self-doubt. Why am I here?"

Over the next few days, Pryor and Weissman eased into their new duties in Bihar: they were taken to a village outbreak outside Patna and saw their first cases of smallpox. They met local medical officials and civil administrators. They hired servants and a driver and decided to share quarters in a government bungalow in the strategically-located market town of Goyal. They began to learn the complex SEP record-keeping system of "blue books," "red books," etc. Their guide was another American epidemiologist who had himself been in India only three months and was slated to depart on September 7th. None of them spoke more than a few words of the local languages, Hindi and Bihari, and Pryor stumbled in his diary when he tried to spell *chapatti*, the most ordinary form of local bread—he thought he heard *cachotee*.

On September 9th Pryor and Weissman were called back from Goyal to Patna; there was to be a big meeting of WHO-SEP workers throughout Bihar. Such meetings were held monthly at the Institute of Social Studies to review the SEP programme. Pryor's notes from this meeting suggest the mix of science, politics and affect driving the foreign team:

It began at nine with Bill Foege giving a summary of India and the world. Now more than ever Bill thinks we can eradicate smallpox from the face of the earth. Enthusiasm was high even from Purnea and K [?] which have over 300 outbreaks at present. Ivan and I feel somewhat guilty with 21 outbreaks—nearly all well contained. . . . The epidemiologists at the meeting were from all over the world. Russia, Sweden, U.K., America, India and Burma. The unity of all these men in a common cause that transcends personal politics is refreshing and remarkable. Everyone [is] commit-

ted to the goal of Zero Smallpox by December. The multinationality and urgency that the group exudes is highly infectious atmosphere [sic]. Anyone who could sit in that meeting room and not want to have at smallpox would be strange. The meeting itself tended to be dull, although the individual reports were often humorous and colorful . . . After lunch the meeting resumed and the Indian Minister of Health came with great pomp and spoke in Hindi about instituting a mass vaccination campaign in parallel with the search and containment programme. Everyone raised opposition to such a programme. The field workers felt that to try a mass campaign would be extremely foolish. First, they thought it would fail to reach the target population, second it would not stop smallpox (as their previous campaigns had not), and third and most important it would siphon off valuable search and containment staff. After 45 minutes of debate featuring Indians and Americans and British proponents, the Minister conceded the point and left with a flourish [23].

The spectacle of young foreigners hammering their objections to an elected health minister's proposals must have been an uncommon sight in Bihar. Within a few days every SEP staff member in the state knew of the dispute.

Back in Goyal, Pryor soon had the district to himself; Weissman had gone across the Ganges to direct operations elsewhere. Pryor's loneliness and cultural distress from this time became more palpable. He saw his first Hindu cremation, which reminded him of his own mortality. A "million" mosquitoes came through his net at night. There was no coffee. The electric pump failed, and he cut his foot while pulling water from an outdoor well. A telegram told him of his mother-in-law's death, and the letters he expected from his wife and family didn't arrive. The nearby river frequently flooded, interrupting transportation, and the local terrain was muddy. He detected his driver stealing petrol.

Despite these mishaps, worries and annoyances, Pryor settled into a routine of constant movement about the district, accompanied by his Indian medical collaborator, Dr Satyesh Majumdar. They enjoyed each other's company, and Majumdar became Pryor's guide, translator and confidante as well as his colleague in the eradication work [24]. Their most important task was to determine whether search and containment measures were being strictly maintained. This required them to make surprise visits to outlying health stations, and Pryor's notes record many occasions when he found Indian physicians and vaccinators shirking their duty [25].

September 19. After lunch we visited two outbreaks. One was an extension of [an older event], the other a fresh outbreak in Goyal Block. The former was being contained by men in the village. The latter was poorly contained with only 25 percent vaccinated after 72 hours. We did our usual job on the local staff and left admonishing them to work more diligently.

September 21. In the afternoon we met with the BMOs [Block Medical Officers] from the entire district. We discussed the search, assessment of present status of outbreaks, containment, reasons for not doing mass vaccination and a host of other things. I'm afraid I was a bit rough on the BMOs who were doing their jobs poorly. Some of these guys are either incredibly lazy or they are not bright enough to

hold the jobs they hold . . . The other thing that strikes me is the lack of sense of responsibility that these BMOs show. They don't consider it negligent to wait a week before confirming a possible smallpox outbreak. It is beyond me. *September 22.* Manjhi [village] was a disaster. We discovered two outbreaks and a probable third on top of Hamidpur. I saw cases in Haripur village (right on the main road—at the most popular tea shop in town) that date back to [July 12]. Just up the lane I saw a case of smallpox with pustules still in place. This too had not been reported or contained. I was able to enumerate 8 cases, and Majumdar assures me this is the tip of the iceberg. Further, we learned of Chopra village where two cases allegedly are lying. I went to visit Hamidpur. The vaccinator was in the village. He had the blue book. Many vaccinations had been done. His follow-up was poor and the take rate dreadful. I finished there and returned to Haripur village and met the health worker, who was very frightened of me (and well he might be having done a perfectly horrible job). Right under his nose I could point out 11 cases of smallpox over the past two months. It is rubbish to think that he didn't know. The villagers told my driver on the sly that the BMO [Block Medical Officer] knew very well but was too busy with his [private] practice (illegal by Centre policies) to visit his sick and dying people. What a terrible blotch on the medical profession . . . I returned home via Gorkhaganj, picking up Majumdar and briefly talking to the college students who will help in the urban search. I also met an old school dispensary doctor. He still felt that mass vaccination was the way to go, gulp! We arrived in Goyal at 9:15pm tired and dirty, disgusted and disgruntled, but ready to begin again tomorrow to do the job that must be done. WHO made no mistake sending in outsiders.

September 22. At Thakji we found only thatch cottages—I should say huts. No mud [walls] or very little. The Ganges frequently overflows this island village. Cattle, goats and children romp about. We visited four tolas [neighborhoods]. Thirteen cases of smallpox were found; two were in prodrome I suspect. The containment was poor. Obvious case hiding was taking place on the part of the JTL [?], Mr . . . [?]. Both tolas [neighborhoods] were given separate blue books, both were horrible. . . . We heard that cases of smallpox had left Thakji and gone to Goyal Block to a folk doctor. We checked with him and he had seen [them]. His office was a scream. Bottles of powder, paint and paste applied to leprosy, cutaneous TB and smallpox. High level quackery! We vaccinated him and his assistant [26].

October 4. Unless you are shown otherwise you can assume that everyone is corrupt and takes bribes. There is an urgency to know everyone's business every minute so that false bribes can be extracted. For example: if a clerk knew I was going to Thakji, he might tell a PMA [Primary Medical Assistant—lowest level health officer in the district] from Sompur I was coming to raise hell and that only a bribe would save my visit. The bribe would be paid and I, as planned, would be miles away. The straightforward bribe is also popular. Just like America you pay someone for silence, a favor, a lie, a lost letter, etc. The amount of unblinking lying that goes on even between men who have long been friends is astounding. Doctors frequently lie to me, to the DMOH [District Medical Office of Health] and Dr Yakub. Every time I hear it, it "blows me away." "Oh yes, we can get you your pay allocation out in . . . six weeks," while a bribe will get it done tomorrow [25].

October 7. We have fairly good evidence that the young energetic Dr Thakur is totally void of medical responsibility. More than that, he knows about outbreaks and will not go himself to see the cases. I really don't know how to express the sense of frustration. He knows the problem, knows the methods to rectify it and won't do it. . . . In Phulganj I had my first failure to vaccinate a resistant woman. She would not listen to reason. I tried all the usual techniques—that I was an American come 10,000 miles just to vaccinate her,

that it was the only way to keep her well, etc., etc. Finally, her husband got very agitated, started screaming and threw me out, saying that I had insulted his house and that I had no right being there (true). I really felt bad about that one. I was the interloper and by Hindu traditions had insulted him by entering his house—the guy had me cold. I had culturally raped him, and he was morally indignant, correctly and justifiably. I hope I won't do that again. Dr Majumdar smoothed things over, but I left feeling rather sheepish.

I have quoted "Joshua Pryor" at length, because one can observe his frustration building almost day by day. His distress with Indian medical colleagues became nearly pathological, and this led him to harangue them, try to catch them in error and show his exasperation. In private he made extremely prejudiced statements about their technical knowledge, professional ethics and personal motivation. Each of these generalizations was belied by his collaborator, "Dr Majumdar," who worked just as hard and was just as motivated as Pryor, but was completely at home in the setting and capable of "smoothing things over" when Pryor exploded. It seems clear that the government physicians and subordinate vaccination staff in Pryor's district were unimpressed with surveillance/containment, and it seems probable that some of them refused to exert themselves to make it work. The fact that the most senior health officer in the state, the Bihar health minister, was openly advocating mass vaccination at the same time that Pryor was pushing hard for surveillance/containment surely played a part in determining some of the Indian staff's inaction. Whatever the precise combination of causes, Pryor felt himself surrounded by incompetents and morally anesthetized saboteurs. None the less, he and his team succeeded in freeing the district from smallpox by the time he departed from India.

Stanley Music also had a series of confrontations with Bangladeshi SEP staff. Contempt for most of his Bangladeshi subordinates arose very quickly after he and four other expatriate WHO epidemiologists were given responsibility for reorganizing the country's smallpox programme in the summer of 1973 [27].

We had no idea how much smallpox there really was at this point. Very little was being reported. We were just beginning to get out and meet the subdivision and thana [sub-district] level personnel in order to evaluate the system in its pristine state. . . . We had learned very quickly that we couldn't trust the routine claim of freedom [from] smallpox. Though we, the foreigners, tried to console one another with great displays of cynicism and dispassionate posturing, our inner emotions were quite another thing entirely. We felt hurt that we were lied to. We felt responsible for the smallpox in our areas. And we got mightily angry at the petty jealousies and red-tape mountains that occupied the health workers and left them lethargic if not totally unresponsive to the smallpox that we had to point out to them over and over again in their own villages. . . . The anger we hurled at the GHAs [Government Health Assistants], SIs [Sanitary Inspectors], etc., was anger of frustration [or] impotence. Like most angers it didn't last long [9, p. 37].

From Music's subsequent narrative, however, it appears that his anger could be tenacious. It was within his power, for example, to discipline lower-level

Bangladeshi health officials. In one case he dismissed a GHA (Government Health Assistant) whom he confronted with evidence of falsifying the containment records in a rural area. The GHA "admitted that the reports were falsified, that he had done no vaccination, that he had not visited the area, and that he had been passing his time as a cultivator in order to feed his family . . . everything was fine until the surveillance team reported the outbreak; even then the GHA thought he would simply be reprimanded and never dreamed that he would lose his job." As Music notes, "the massive intervention was possible only for a foreign adviser" [9, p. 53]. In another example, Music relentlessly pursued a Sanitary Inspector who had deceived him about containment in a group of remote villages. Subsequently, the surveillance teams detected active smallpox, but

when confronted with this information, the SI stated that he had only a bicycle for getting around and that most of the villages he had checked had been done well. If I wanted him to do more I would have to give him a motorcycle. In fact, he said that if he had a motorcycle he would guarantee the containment. I had no motorcycle to spare and pointed out that he could get to all the villages on a bicycle, and that by only visiting the easy-to-get-to villages and that by making his tour programme in advance for the whole month, he had made it easy for his workers to determine where he was going to be and when. He still insisted on a motorcycle and stated that unless he was present his workers couldn't work. . . . The next month it was the same story: he said that the work was finished and it was actually less than half done. By then it was close to getting out of hand, so I moved a WHO short-term expatriate adviser into the thana to take over the containment. That went smoothly and the outbreak was finished in a short while. . . .

The SI had taken the precaution of vaccinating in the area where an inspection (an unlikely event) was most likely to occur—on or near the roads. The rare inspection that did occur at his level was only a token one with the superior officer spending as little time as possible in the thana [sub-district] and hurrying back to his own headquarters before nightfall. The SI had not increased either the pace of his work or the number of hours each day he spent at it. To him the situation was obviously not an emergency. . . .

I wrote all the preceding in a formal complaint against the SI and gave this to the Civil Surgeon and the Chief Medical Officer of Health. The ultimate action decided upon was not as severe as I thought appropriate, but was a punishment of the SI nonetheless: he was ordered transferred from his thana to the adjacent one—a distance of 6 miles. When I returned to the original [thana] a bit later I found the SI still there. He told me he did not wish to be transferred and that he had asked his relative who was a functionary in the office of the Minister of Health to cancel it. Subsequently I learned that his relation had phoned both the Civil Surgeon and the Chief Medical Officer of Health saying that the Minister wished the transfer canceled. When they requested an order from the Minister in writing, he then called the Director of Health Services (Preventive) in Dacca. This man did not request an order in writing and did exactly as he was asked to do: he telegraphed the Chief Medical Officer of Health and ordered the transfer stopped. All of this was brought out in [a] full investigation of this affair (including a copy of the telegram). It took almost six months for the transfer to be accomplished. . . . The five or six months consumed in the process were not considered over-long in Bangladesh, and there was no publicity [9, p. 56].

These anecdotes record trivial moments in the overall

SEP campaign in Bangladesh, yet Music took the trouble to record them because he wanted to give the reader "a first person awareness of what smallpox eradication was actually like" [9, p. 45].

From the evidence offered, expatriate American epidemiologists found eradication work in South Asia a struggle not only against disease but also against some host-country colleagues whom they found dissembling and ineffective. Active surveillance, designed to find smallpox, kept turning up lies and haziness; this led in some cases to drawn-out efforts to instill discipline in SEP cadres by making examples. Intimidation—in this case threatening to punish malfeasant South Asian colleagues—became a time-consuming concern for some Americans, who could not stand back from their immediate problems to try to grasp what was happening in India and Bangladesh as a whole. In both countries the key difficulty was that some district- and sub-district level health workers were still not fully persuaded that arduous methods of surveillance and containment were necessary. In both countries there were officials at the highest levels who disputed the effectiveness of containment under South Asian conditions, and in fact smallpox had been eliminated from Bangladesh in 1970 by rigorous application of the familiar method of mass vaccination. Some WHO epidemiologists, arriving in the country after 1973, held Bangladeshi SEP workers personally responsible for the huge amount of smallpox present, even though the ultimate source of the disease lay in eastern India and had only re-entered Bangladesh with the return of refugees in late 1971. In Bangladesh as in India, the WHO advisers' access to abundant extra resources, their higher-level qualifications and their single-minded focus on smallpox to the exclusion of other health issues isolated them from the concerns of their Bangladeshi colleagues. Severe administrative problems in the new nation and everyday norms that allowed government employees to manipulate their contacts in the higher bureaucracy drove American WHO workers to distraction. While some of the latter had served in health departments in the United States (Music, for example, had served in the Florida Department of Health), they nonetheless arrived with exaggerated expectations about the probity and efficiency of local-level South Asian bureaucracies. Virtually parachuted into exotic settings without knowledge of local languages, occupational norms and cultural values, it was predictable that they would react sharply to perceived failures around them. That a few would pursue malfeasant South Asian colleagues and subordinates with great tenacity and turn to coercion against vulnerable sections of the public that resented highly intrusive containment was less predictable. These developments, however, speak to the Americans' own inadequate preparation for a difficult assignment.

DISCUSSION

As noted at the beginning of this essay, most people world-wide actively welcome, or can be persuaded to accept, measures of mass immunization that aim to eradicate or control disease. This was true for the smallpox eradication programme in the 1970s, and it is true still for the polio eradication and EPI campaigns in the 1990s. Why then raise the issues of coercion and intimidation? Hasn't smallpox eradication justified itself over and over by saving hundreds of thousands of lives and by averting blindness among nearly 5% of the survivors? Don't these results, and the substantial sums saved by dismantling a 175-year-old world-wide vaccination program, justify a limited number of obscure acts of zeal in India? By and large they do. Yet I believe there are three reasons for stirring up the embers of the South Asian eradication programme today. In the first place the success achieved in the South Asian campaign has been highly influential and has demonstrated the technical feasibility of disease eradication as a significant public health strategy [28]. Global coordination by professional and highly motivated disease-control units inside the WHO, large-scale fund-raising efforts for control/eradication of targeted diseases among official, multilateral and private aid agencies, all-out national mobilization of public health personnel at the expense of other disease-control and primary care programmes, outbreak-driven containment measures dependent upon surveillance efforts by expatriates—these once-novel characteristics of the Smallpox Eradication Programme are now, in various combinations, normal features of recent campaigns against, for example, polio, hepatitis B and dracunculiasis and the six EPI target diseases. Within the next ten years a new generation of vaccines against other grave diseases, such as childhood pneumonias and diarrheas and, possibly, against malaria, dengue fever and AIDS, is expected [29]. But it is not only the distinctive organizational, financial and epidemiological methods that have been transmitted forward from the SEP; so have the aggressive attitudes and values that came to underpin it in its most successful moments during the mid-1970s. These attitudes and values, it might be argued, served the SEP well in the context of a disease *eradication campaign*, but they make a bad fit with the requirements of a disease *control programme*. Few communicable diseases, in fact, are suitable for eradication, and in most cases the best that can be hoped for is to control a disease's spread [30]. Control implies sustained high immunization levels in whole populations, which implies in turn unceasing vaccination work in the hamlets and wards where new-born susceptibles accumulate year by year. There can be no decisive victory in a control campaign, and, as a corollary, it makes no sense for vaccinators who need widespread public acceptance and understanding to fall upon the public as upon prey. The public must feel itself a willing subject. In

short, unwonted aggressiveness in delivering immunization is unsuited to building sustainable vaccination programmes.

Second, coercion can leave behind a residue of resentment that sours public attitudes toward the next vaccination campaign. The social memory of traumatic encounters with the state and its agents runs deep in South Asia, where low literacy levels paradoxically require that public events be kept in consciousness through oral accounts and rumors rather than by written means. Rumors that disparage the motives or revile the conduct of government agents are as great an enemy of public health as the disease because they lead to avoidance and opposition. SEP managers themselves understood this point in retrospect, as indicated above, but in the heat of the campaign it was difficult to keep in mind. It is also worth considering whether some of the resistance that vaccinators encountered in the villages of India and Bangladesh in 1975 might not itself have been the result of *prior* half-completed but unsuccessful immunization campaigns in which coercion had played a role. In any case, every new health campaign requires renewed public interest and support, and coercion does not foster continuing public demand. Once public opinion turns against state-enforced measures, the task of health workers becomes much more difficult [31].

Third and finally, it would be an ethical error to hold that consent to immunization is less important in villages of Bihar and Bangladesh than it is in Birmingham or Buffalo—unless one accepts the ethical partition of the world. No one in the WHO leadership argued for a partition in so many words, yet coercion against resistant villagers in South Asia was tacitly accepted as necessary because it 'worked,' it 'got the job done.' Where did these rough and ready field values come from? Some might see in them a resurgence of colonial conduct, abetted by the post-colonial state. But an ultimate source probably lies in the tradition of coercive vaccination in the North during the nineteenth century. Smallpox vaccination was one of the few effective preventive measures available to European and American governments between 1800 and 1900, and a drawn out conflict between centralizing public health authorities and organized anti-vaccinationists was a notable feature of Victorian urban life. By the beginning of the twentieth century the struggle between partisans for and against vaccination in the U.S. and Britain ended in a draw; vaccination was made compulsory but the statutes allowed exemption on the basis of proven religious or conscientious objections [2]. Ever since, the legal and political constraints on vaccination have compelled European and North American health agencies to stimulate public demand for immunization by means of persuasion. In the United States much of the success of the Centers for Disease Control and Prevention has been built upon its ability to realize the technical promise of mass immunization

in a significantly anti-authoritarian political environment [32]. Given this hard-won experience, no one in the CDC has ever argued publicly that public health in the developing world requires coercive methods. Yet CDC epidemiologists and other expatriates employed by WHO in India and Bangladesh clearly consented to coercion during the mid-1970s. This telling contradiction requires attention. In recent years the global health community has committed itself to formal standards and protocols that aim to prevent abuses in international medical research [33]. No similar attention has been paid to setting up formal international standards for public health measures, although the continuing potential for abuse is evident.

We are thus left with the question whether expatriate epidemiologists in South Asia in the mid-1970s felt that coercion and intimidation were necessary to achieve 'victory.' In a thoughtful study of the global smallpox eradication programme, Jack W. Hopkins has drawn out ten "lessons for the future" which the international health community should absorb. Several of these lessons speak directly to the issues raised in this article. In particular, Hopkins advises organizers (lesson three) to "pick good people" to run disease eradication and control programmes, and, following Lundbeck, he suggests that "good people" are those who can "surmount obstacles such as religious beliefs, political disagreements, administrative inefficiency, indifference, personal craving for power and influence and a number of other human weaknesses" [34]. At first glance Hopkins' lesson is faultless, but, as this essay has tried to show, religious belief, political disagreement, administrative inefficiency, etc., may rise up especially powerfully in local contexts where expatriate health workers parachute onto the scene with their surgically narrow agenda, brief commitments, dizzying resources and messianic impulses. Whether local difficulties are to be 'surmounted' by force and intimidation or by persuasion and education should not turn on the personal character of expatriates—on whether they are "good people"—but on a careful, site-specific consideration of the long-term and short-term consequences of working *with* or *on* the local health personnel and populace. It may be that there is a defensible case to be made for coercion and intimidation—some officials clearly believe these methods must be kept in reserve—but let the case for strong methods at least be made openly.

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2. Historically considered, mass vaccination in the U.S. and Europe involved coercion which provoked vehement, sustained and occasionally violent public opposition, but that pattern has given way in the last 50 years to more sophisticated methods of persuasion and less cohesive popular resistance. Regarding opposition to nineteenth-century smallpox vaccination see, for example, Leavitt W. J. Politics and public health: smallpox in Milwaukee, 1894–95. *Bull. History Med.* 50, 553 (1976); Porter R. and Porter D. The politics of prevention: anti-vaccinationism and public health in 19th century England. *Med. History* 32, 231 (1988); Huerkamp C. The history of smallpox vaccination in Germany: a first step in medicalization of the general public. *J. Contemp. History* 20, 617 (1985).
3. Among 19 questions which Brown *et al.* suggest managers should ask about the causes of low acceptance rates in childhood vaccination campaigns, only two focus on the vaccinator–vaccinee interaction: "Does staff's language or culture differ from that of users?" and "Do parents suffer indignities?" Brown J., Djogdom P., Murphy K., Kesseng G. and Heymann D. Identifying the reasons for low immunisation coverage—a case study of Yaounde (Cameroon). *Rev. Epidemiol. Santé Publ.* 30, 35 (1982).
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10. Music makes it clear that this degree of chaos was incompatible with long-term SEP methods, and that in a subsequent development the Bangladesh programme began to hire temporary male and female vaccinators in the affected villages rather than launching military-style containment raids. The definition of containment continued to rest on "focally intense ring vaccination," but the vaccinators were locals, which greatly lessened the coercive aspect.
11. The three examples appear [9, p. 46]. Neither the village nor the district is identified. Music did not speak Bengali well.
12. Music notes that "By vaccinating her first and then providing food afterwards as a personal gesture, I emphasized that there were no exceptions. Later, beggars were to be revealed as a major mode of spread, and we were to establish isolation centres for the care and feeding of these people until they would no longer be infectious" [9, p. 49].
13. Brilliant, an American, was not a CDC epidemiologist. His unusual path of recruitment into the South Asian WHO-SEP has been narrated in Ram Dass. *Miracle of Love: Stories about Neem Karoli Baba*, pp. 163–169. Arkana-Penguin, New York (1991).
14. Brilliant L. and Brilliant G. Death for a killer disease. *Quest* May–June (1978).

15. July 1992 telephone interview with Dr Brilliant, now associated with the SEVA Foundation, San Francisco. Brilliant pointed out that Mohan Singh spoke Hindi, which Brilliant transcribed himself.
16. Singhbhum district in Bihar was a sore spot for the SEP; it was called in spring 1964 "the world's greatest exporter of smallpox" and continued to harry WHO-SEP staff [4, 6].
17. Weightman S. and Pandey S. M. The semantic field of Dharm and Kartavy in modern Hindi. In *The Concept of Duty in South Asia* (Edited by O'Flaherty W. D. and Derrett J. D. M., pp. 217-227. South Asia Books, New Delhi (1978).
18. Interview with T. Stephen Jones, M.D., Centers for Disease Control, Atlanta, GA, 27 June 1984. Author's collection, Tape 2, side B, Soundesign index 730.
19. Emphasis added. The Indian report suggests further that the use of force was always illogical: "The vaccinator who rushed into the village, vaccinating by force, provoked and compounded the animosity and, although he possibly obtained a short-term benefit, he encouraged concealment of any future cases for fear that he might return again" [4, p. 113].
20. Joshua Pryor and Ivan Weissman are pseudonyms.
21. Other American epidemiologists kept notes in journals, but Pryor's is particularly full and contains very frank observations. His diary (and his field notes) have been furnished to the author on condition of confidentiality. Pryor extended his three-month tour by one month and left India late in 1974.
22. For a list of all foreign WHO epidemiologists in India during 1973-1975, see annexes to Ref. [4]. The similar data for Bangladesh will be found in Ref. [5]. The official WHO account of the campaign in South Asia is given in Ref. [6] chapters 15 and 16.
23. Pryor diary, 9 September, 1974. It seems more than likely that this was the Bihar Health Minister, who is known to have advocated mass vaccination. The Indian Minister of Health and Family Planning, Dr Karan Singh, was a staunch advocate of surveillance/containment methods and on at least one crucial occasion assisted WHO staff in defeating the advocates of mass vaccination [6, p. 765].
24. "Majumdar" is a pseudonym. Part of their friendship was based on shared religious feeling. In his diary entry for 17 September 1974, Pryor records "Dr Majumdar played his usual role of teacher, friend, critic and ally. ... He gave another one of his lesson on Hinduism and discussed the Bhagavad Gita with me. Apparently Dr M. has read the Koran, Bible, Vedas and Bhagavad Gita. He feels that the ultimate truth is the same and that basic underlying principles carry throughout. He believes in a God. He finds the story of Christ charming, but relegates it to a semi-mythological status like that [of] Lord Krishna."
25. The following extracts contain grossly prejudiced statements that belittle the competence of Indian health personnel. Much of what Pryor asserts was written under stress, and the author [PG] reproduces these passages to indicate how Pryor's critical attitudes hardened into markedly unsympathetic prejudices.
26. Pryor diary, dated September 22 but probably September 23, 1974.
27. As was the case with Pryor's remarks on health personnel in India, much of what Music asserts here about Bangladeshi health personnel in the following passages is strongly prejudiced.
28. In the recent *World Development Report: Investing in Health* (1993) the World Bank notes that "in many ways the Intensified Smallpox Eradication Programme exemplifies the potential of today's medicine" (p. 17) and celebrates its status as a model of what technology can accomplish. This is a familiar position found in numerous articles and documents over the last 15 years.
29. For likely targets of future disease control and eradication campaigns, see Bart K. J. Vaccine-preventable disease and immunisation in the developing world. *Pediatr. Clin. North Am.* **37**, 735 (1990); Hayden G. F., Sato A. P., Wright P. F. and Henderson R. H. Progress in worldwide control and elimination of disease through immunisation (Review). *J. Pediatrics* **114**, 520 (1989); Hayden G. F. and Henderson R. H. Worldwide control of disease through immunisation: progress and prospects. *Infect. Dis. Clin. North Am.* **4**, 245 (1990); Kim-Farley R. *et al.* Global immunisation. *Ann. Rev. Publ. Hlth* **13**, 223 (1992).
30. International Task Force on Disease Eradication, Recommendations. Carter Center and U.S. Centers for Disease Control and Prevention, Atlanta (1993).
31. A comparison with the consequences of coercion in the Indian family planning programme during the late 1970s is instructive. See Vicziany M. Coercion in a soft state: the family-planning programme of India. *Pacific Affairs* **55**, 373 *et seq.* (1982) and Bishop M. F. Coercion in a soft state: the family planning programme of India. *Pacific Affairs* **56**, 510 (1983).
32. The CDC, for example, has repeatedly been buoyed by its effectiveness in organizing vaccine trials and domestic immunization programmes as well as of course its successful leadership role in the global smallpox eradication campaign. See Etheridge E. W. *Sentinel for Health: A History of the Centers for Disease Control*, Chaps 5, 10, 14, 21. University of California Press, Berkeley (1992).
33. For example, the World Health Organization has set up a Council for International Organizations of Medical Sciences Group for Development of International Guidelines for Epidemiologic Research and Ethical Review Procedures (1988). The logic of research differs from that of public health measures, but it has to be demonstrated that the ethical dilemmas are not of the same order.
34. Hopkins J. W. *The Eradication of Smallpox: Organizational Learning and Innovation in International Health*, pp. 126-127, note 21. Westview Press, Boulder, Colorado (1989).