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**PLAGUE AND GARBAGE: IMPLICATIONS OF THE SURAT OUTBREAK (1994) FOR URBAN
 ENVIRONMENTAL MANAGEMENT IN INDIA**

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ABSTRACT

Will the 1994 plague outbreak in Surat have positive impacts for Indian cities, in spite of its costs to the economy and to national and international confidence in India as a modern nation? This paper poses the question specifically in relation to solid waste management, for accumulated garbage and filth have long been seen as both factors in epidemics and symbols of urban neglect and poverty. I discuss the immediate reactions and the evidence of longer term response up to April 1995. I conclude that while there are signs of people taking the plague lessons to heart, it is questionable whether the response so far is sufficient. The lack of leadership for urban public health, and specifically for solid waste management has been brought into relief by the 1994 plague episode.

INTRODUCTION

Plague is universally seen as calamity (Curson & McCracken 1988). Apart From the demographic consequences when many people have died, there have been large losses in production and trade, drastic destruction of property, and disruption of social and political life.

On the other hand, historians of plague outbreaks have pointed to silver linings. A major sub-theme in analyses of plague outbreaks has been the possibility of there being positive outcomes (in spite of controversies over their attainment) upon health, sanitation, city planning, and health administration. This point has been made with reference to the epidemics in Europe and Russia, in Sydney in 1900, the pneumonic plague in Manchuria in 1910, and the epidemics in India, particularly in Bombay and Calcutta between 1896 and 1912 ². (Alexander 1980; Curson & McCracken 1988; Nathan 1967; Arnold 1993; Catanach 1993; Seal 1987).

Accepting that the disease outbreak in Surat in September 1994 was indeed pneumonic plague, in light of past history it is not surprising that the reactions were stronger than subsequently seemed warranted by the number of deaths. It has been estimated that India lost over \$1

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billion in export earnings, and 40-60% of its anticipated tourism (Steinberg 1995). Several million people lost income when they were unable to work, locally or internationally; many more millions suffered panic, fear or dislocation. Thousands of squatters had their dwellings inspected and condemned. As a nation, India found its modernity, its efficiency, its health administration and local governance called into question.

Will the 1994 plague scare have positive impacts for Indian cities? This paper is not a comprehensive discussion of the impacts of the plague scare but raises the question specifically in relation to solid waste management and examines the immediate reaction to the plague outbreak (expressed in print media, September-November 1994) and the later response of government and the voluntary sector (January-April 1995) to charges that poor waste management was an important factor for both public risk and public fear.

PLAGUE AND CITY CLEANLINESS

Although the precise pathways by which the bubonic form of the disease struck down humans were not known until after 1900, and although even today we cannot assert that there is a direct relation between dirt and plague [except in so far as dirt encourages populations of rats and fleas (Alexander 1980, Catanach 1995)] the disease has always been associated with crowded living conditions (especially houses of wood, thatch and mud and wattle) and accumulated filth (cf. Appendix 1).³

Plague outbreaks have turned spotlights on the living conditions of the very poor (since death rates have usually been higher in the poorest and most crowded neighbourhoods). More generally, inadequate urban planning, waste services, and public health facilities have been pointed out at times of epidemics. Facts about living conditions in marginal and neglected parts of cities are laid bare and in reporting on clean-up efforts it is usual to estimate the amounts of filth and garbage discovered and removed (cf. Condon 1900, G. B. House of Commons 1897 & 1898; Curson & McCracken, 1988; Appendix 1). In India in 1994 the state government in Delhi claimed to have collected up to 3000 tonnes per day more than was routine (Subramanian 1994).

Practical efforts to combat plague have always included frenzied efforts to clean up, and in later times to disinfect, sewers, drains, cesspits, and garbage piles. Hence the town "scourings" of late medieval Europe. Rat patrols have sought out places of rodent harbourage. Demolitions have been ordered of buildings lacking sanitation and surrounded by uncollected waste, this often encompassing whole city blocks. Substances believed to be disinfectants and later rodent and insect poisons have been massively applied to suspect areas, and even to people. These operations have necessitated the appointment of special corps of "scavengers" (i.e. city cleaners), rat catchers and inspectors, even when the military were called in to inspect, to quarantine and to control.

In the epidemics in Europe, Russia, Manchuria, Bombay and even Sydney the drastic efforts to combat dirt often had counterproductive effects, including riots, public disaffection, and demolition without sufficient rehousing. Yet the long-term impacts on public health institutions and waste management are usually judged to have been beneficial for society.

The cleansing operations in Sydney in 1900 revealed the shocking conditions in parts of the city, with crowded, dilapidated buildings, lack of disposal of human excreta and accumulations of garbage and filth. Curson and McCracken conclude that combatting the plague formed a "watershed in Australia's social and epidemiological development," bringing important changes in public health, a greater appreciation of sanitation and housing and a "rediscovery" of the urban poor, as well as advances in disease control (Curson & McCracken 1988, p. 193).

The Plague Prevention Service created to combat the pneumonic plague epidemic in Manchuria in 1911 is regarded as China's first attempt to create a public health service based on modern medical principles, contributing to the advance of medicine and to modernization. (Nathan 1967, p. 78). Earlier, in the late 18th Century, the severe epidemic in Moscow contributed to the evolution of Russia's public health institutions (Alexander 1980, p. 301).

Discussing the socio-medical impact of the plague which began in 1896 in India, Arnold, who emphasizes the opposition of Indians to the plague measures and the immediate reaction against western medicine, nevertheless sees the period as a turning point, a "necessary rite of passage for western medicine in India," after which the importance of India working out its own "sanitary salvation" with people's co-operation was emphasized by government officers (Arnold 1993 pp. 237-239). Catanach points out that the creation of improvement trusts in Bombay and Calcutta were direct consequences of the appearance of plague and fear of it (Catanach, 1993, p. 220).⁴

While the structures of public health that evolved after epidemics were lasting, however, the awareness of waste problems and the resolve to deal with them through good urban services and public co-operation in most cases were not consistently sustained. Is this to be the situation in India in the late 20th century?

SURAT 1994--THE REACTION: MEDIA COVERAGE AND HIGHLIGHTING OF URBAN ISSUES, SEPTEMBER-NOVEMBER

While media coverage during the plague scare focused on explaining pneumonic plague and tracking suspected or actual cases of disease, there was constant reference to the condition of Surat as a causal factor. Surat was referred to as the dirtiest city in India, the richness of its diamond-cutting industries being contrasted with uncollected garbage in squatter and slum areas (Shah 1994; Stackhouse 1994). Referring to 1000 tonnes of garbage left each day, Dr. Bisharoop Das, of the Centre for Social Studies of South Gujarat University, was

quoted as saying, "If plague had to break out, Surat was the perfect place for it." (Associated Press, Dec. 3). There was all-round criticism of the local authorities as complacent or negligent (cf. *Statesman* 25 Sept.; *Times of India* 25 Sept.; *Hindustan Times* 29 Sept.; *India Today* 15 Oct.). The *Economic Times* titled its emphatic editorial critical of Surat, "Fiefdoms in squalor."

Soon the scope of discussion broadened to more general comments on the administration of urban services and public health administration (Qadeer et al. 1994; Swami 1994; Karat 1994). That the plague outbreak demonstrated India's failure to address the basic needs of growing cities, while pursuing many forms of modernization was a major theme of international commentators. The editorial in *Lancet* of 15th October, for instance, said:

Plague is more than a biological disease. It is a symptom of a more cruel social disease-- poverty... There is no vaccine that will protect against poverty.

The point was made in various ways in newspapers and magazines such as *The Times*, *The Washington Post*, *Time*, *Newsweek*, *The Economist*, *Nature*, *The Far Eastern Economic Review*, and so on. In the survey of India in January 1995, *The Economist* wrote: "India's most visible failure over health is filth" (*Economist* Jan. 21 1995).

But the most detailed exposes relating to waste management in India prompted by the plague came from Indian magazines. Principal among them was *India Today*. The long feature article with emphatic photos by Subramanian "Our filthy cities: can we clean the mess?" in the 31 Oct. issue reached a large readership in India and abroad and has been since cited by international magazines such as *The Economist*. Subramanian argued that:

The recent outbreak of plague has brought into sharp focus the abysmal state of sanitation and filth in the country's urban areas... Suddenly a country that wallows in filth was witness to the rare sight of municipal corporations working overtime to remove garbage and unclog sewers... Overnight, words like sanitation and hygiene were back on the national agenda.

Explaining the health hazards of poor waste management, the article supplied statistics on sanitation and garbage services in the major cities, with emphasis on the amounts of garbage uncollected every day by municipal services. The main cities were ranked according to "which city is the filthiest?" *India Today* was severely critical of the limited outlooks of the Ministries of Urban Development, Health and Non-conventional Energy Sources and outlined multiple factors contributing to inefficient waste collection and disposal.

Detailing the major efforts to clear away garbage and filth during the plague scare (the New Delhi Municipal Corporation for instance said it had removed up to 7,000 tonnes of garbage daily compared with the usual

3,880 tonnes) the article said the emergency plague clean-ups were a shocking indication of what could be done under emergency conditions. In an attempt to bring hope to an apparently desperate situation, reference was made to citizens' organizations for community participation and education in waste management (Subramanian 1994).

Less detailed references to urban conditions were made by, for instance, the environmental magazine *Down to Earth*. In the leader "Mystifying the plague," decrying the conditions in Indian cities, the magazine criticized not only local government leaders but the pattern of industrial development whereby large cities were encouraged to grow without attention to the basic needs of the urban populations.

It was a notable aspect of reporting on the plague scare that garbage was used as the predominant symbol of poor urban environment. Apart from photos of frightened, masked citizens the most common images used to illustrate plague stories were those of garbage piles or garbage clean-up. The *Washington Post* began its October 1 report thus:

Before the pneumonic plague and accompanying panic struck India this week, 44-year-old Nasrима seldom saw a garbage truck.

In her Bombay slum neighbourhood of Bychulla, heaps of fetid trash and human waste line streets and rats scarcely wait for her family to finish a meal before they scurry out of dark corners for the crumbs. "We live and die amid the garbage," said Nasrима, "everybody is always afraid of disease here."

Watching the city garbage crew that ventured into Bychulla today as part of the biggest cleanup effort in recent Bombay history, she asked: "Where were they before?"

As the economic consequences of the flight of a third of Surat's population, the closure of schools and cinemas in Delhi, the boycott of transport from India in the Middle East, and the cancellation of tourists' plans became apparent, there was more emphasis on the price that India would pay if cities could not be rehabilitated. As *India Today* put it briefly in the Comment section of 15 October: "Nobody wants to invest in the middle ages."

The *Economic and Political Weekly* published the first attempt to explain the wider context of the plague outbreak and its implications. In an article entitled "Contextualizing plague: a reconstruction and an analysis," three faculty members in Social Medicine and Community Health at Jawaharlal Nehru University argued that a serious decline of public health funding and facilities in India resulted from cutbacks under structural adjustment. They pointed to aspects of the history of public health administration (with emphasis on technology, population planning, privatization, inadequacy of medical education, poor prioritizing), the growth of large urban areas with industrial concentration, and the weakness of municipal government as important for understanding increasing failures to deal with various epidemic

diseases effectively. Their concluding sentence -- "The real challenge for public health at this juncture is to rise above the garbage."-- clearly had a double entendre, as they had criticized the clean-up campaigns as being too focused simply on garbage and not able to see epidemics as a result of the ongoing decay of urban systems (Qadeer et al. 1994, p. 2989).

For the most part, however, the media sought the opinions of the medical establishment, mainly on the topic of the aetiology and treatment of plague. Occasionally the medicos ventured to make broader comments. Meeting on 12 October, the New Delhi branch of the Indian Medical Association was reported as being "hopeful that the plague scare provided the right atmosphere for enactment of strict laws for the disposal of rubbish and vs. spitting." (*United News of India* Oct. 12 1994).

Amidst the avalanche of stories and comments from reporters and the general public, comments from the government on the subject of urban sanitation and environment were thin on the ground.

The prime minister made the barest of comments. The vice-president, K. R. Narayanan, was quoted as declaring: "Unless we are able to get rid of the slums in our country, our fight against communicable diseases will remain a losing battle." (Ian Stewart 1994 *United Press International* Sept. 29). The chief minister of Delhi was photographed sweeping near Ajmer Gate using a rarely-seen, clean, long-handled broom. He later said that he planned to form citizens' committees to involve people "on a permanent basis" in keeping Delhi clean (*Times of India*, Oct. 3).

Although the deficiencies in waste management brought to light by the media were incontrovertible, damage control seemed to dictate that the government emphasize that deaths were few and much of the international reaction unwarranted. Qadeer, N and Baru commented:

Government was much more concerned about the economic losses incurred, the poor image presented of India by the western media, the effect it would have on exports, the tourism industry, and the possible withdrawal of investments by multinational corporations.

THE RESPONSE: GOVERNMENTAL AND NGO ACTION, LATE 1994 TO EARLY 1995

By November 1994 the dust from the flurry of activity designed to contain the epidemic had settled. The outbreak had mercifully claimed relatively few lives. It is the actions taken since the end of the emergency that must be scrutinized to assess whether larger lessons have been learned from the outbreak.

There were a number of announcements from the Central government. It was reported that the Cabinet had acknowledged the need for large scale clean-ups in the major cities (the main motive cited was to reassure foreign investors) (*The Hindu International Edition*, Nov. 12). The

World Bank was advising on a massive clean-up package for infrastructural improvements in Indian cities (ibid.). The previous day, a Technical Advisory Committee on Plague had been set up, which included in its terms of reference recommendations on the prevention of further outbreaks.

Next came the news of a "high-power committee" convened under the Planning Commission to consider specifically issues of solid waste management arising from the plague concerns (see below).

In the principal cities, with the exception of Madras, the clean-up drives continued for a month or more. In Delhi, it was felt that there was better co-ordination of the municipal departments involved in solid waste management than had been previously achieved. There was some reporting of local initiatives to improve solid waste management, and discussions of technologies for recycling (Subramanian 1994; Prasannan 1994; Fernandez 1994).

A number of experts in research and training institutes (e.g. Dr. Florian Steinberg, Indian Human Settlements Management Institute, George Verghese, Centre for Policy Research and Dr. Dinesh Mehta of National Institute of Urban Affairs in New Delhi) made statements about how the plague outbreak showed the need for massive action on urban environments (Steinberg 1995; Prasannan 1994). They drew attention to the broad context of urban neglect, mentioning solid waste management as a visible feature.

Among non-governmental agencies and groups (international and Indian) there was considerable discussion and re-orientation. Within UNICEF, for instance, the basic urban services approach was discussed, with comments that this approach has not paid enough attention to the "nitty-gritty" of how effective are the services and infrastructure for the removal of human wastes and garbage (Mehta 1995). At the request of the prime minister's office, the Voluntary Health Association of India was deeply involved during the outbreak, both medically and in public education. Dr. P. N. Sehgal in Delhi is convinced that the public learnt a great deal about the relation of epidemic disease to waste and crowded substandard housing from the Surat outbreak. "This awareness will stay," he said when I interviewed him in early January. On the other hand, he added, the problems of squatter and unauthorized settlements are of such a huge magnitude that mere public awareness cannot do much to combat them (Sehgal 1995).

Another encouraging development is that Sulabh International Social Service Organization, whose work has been in basic sanitation, is now branching out into the field of solid waste management, with a view to adopting an integrated approach to waste problems and their solutions. On 11th January the Sulabh International Institute of Technical Research and Training (SIITRAT) hosted a workshop on the topic, which was attended by the director-general of the Municipal Corporation of Delhi, the chief engineer, the director-general and others from the Housing and Urban Development Corporation, the United Nations

Development Programme, and some members of NGOs. At this meeting, the neglect of solid waste management in Surat and its consequences was pointed to as a lesson for all cities in India. A number of initiatives were outlined, while the low priority of solid waste management as an aspect of urban planning was frankly admitted.

Recently the Shastri Indo-Canadian Institute has awarded a small seed grant to SIITRAT to begin work on solid waste management in market areas and for apartment buildings. HUDCO has signalled its desire to stimulate action for solid waste management by funding pilot projects in collection.

Groups already concerned with waste management issues became especially active during and following the plague outbreak. Civic EXNORA (under EXNORA International which seeks "excellent, novel and radical solutions" to urban problems) intensified its "Clean India" campaign which focuses on the street and neighbourhood level to eliminate problematic street bins and introduce door-to-door collection of wastes paid for by residents (Exnora International 1995). Waste Wise and the Centre for Environmental Education in Bangalore have expanded their experiments in source separation and decentralized composting.

Other more general social service organizations, such as the Rotary Club, had been active during the emergency and have committed themselves to long-term interest in waste issues. In Bombay, the Rotary Club has given funds for the supply of waste bins at railway stations and other public places, and is monitoring the clearing of these bins (*Times of India*, 2 Jan.).

Some bilateral and Indian funds are being committed to research into the outbreak of the plague and an understanding of the administrative and socio-environmental context. The University of Amsterdam is funding a large research project in collaboration with the Centre for Social Sciences of the University of South Gujarat into the conditions in Surat prior to the plague's appearance. This Centre has ongoing research on industrialization in Surat and working and living conditions (Shah 1994). The Faculty of Social Medicine and Community Health at Jawaharlal Nehru University is continuing its analysis of public health administration in the light of the plague scare (Baru 1995). The Institute of Social Sciences in New Delhi has undertaken a case study of urban government in Surat (Ghosh, Ahmad & Maitra 1995). We will probably hear of more research projects shortly, as proposals for funding that address the topic of conditions relevant to epidemics are likely to be given priority by national and international funding agencies.

While government task forces and institutional research can be documented, I cannot judge whether the concern of the general public has been channelled into a lasting motivation for overall improvement in environmental sanitation in India's cities. In Surat, citizens' dissatisfaction with city and state officials was expressed in demands for resignations (*India Today*, 15 Oct.); there have been many letters

to the press criticizing India's "abysmal advance in public health" (Rao 1994) and pointing out the need for a concerted effort at clean-up and better management of urban services (cf. *India Today*, Nov. 15). But, there has been little reporting on the waste management angle since January. When I raised the subject in Delhi, the reaction was that it was now "business as usual," a resigned acceptance that nothing was likely to change in urban affairs.

The response in the first two months of 1995 appeared reasonable enough. There were appropriate statements of concern and resolutions to tackle the root causes of such epidemics. Against this response we have to set some discouraging signs that for the most part central government officers, municipal departments and the citizenry have gone "back to business" and the impetus for concerted action is rapidly dissipating.

BUSINESS AS USUAL?

When I visited Delhi in early January, the media coverage was focusing on the debate as to whether the Surat outbreak actually was pneumonic plague, even though by this time the WHO scientists were sure that the Surat disease was pneumonic plague. The effect of this January phase of media coverage was to shift attention from efforts to address the urban conditions that enabled the disease to find a footing in Surat and that made so many other centres susceptible. While there may have been too much minute attention to daily details of the disease in September and October, it can be argued that there was not sufficient media attention later to the clean-up work and the plans for long-term rehabilitation of urban environments. Over the course of time, there was media hype and un-hype.

Were the media stung by the charge that their initial coverage was "panic-mongering"? (Sarkar 1994). Or was the paucity of follow-up reporting merely a reflection of the fact that substantial reform was not much in evidence?

In any case, after a collective sigh of relief at the small loss of life, the overwhelming response appears to have been "business as usual."

At the highest levels of government, general statements designed to reassure foreigner investors and international observers were followed by a defensive secrecy about apparently positive steps. For instance, when I got in touch with the chairer of the High Power Committee on Solid Waste Management of the Planning Commission referred to above (Prof. J. S. Bajaj) my enquiry was cut short with the statement that it was "entirely an internal matter" that was not to be discussed with foreigners. Perhaps this reaction came from a realization that nothing of practical importance was likely to be decided by the committee, which met in December without any terms of reference, and among whom there were few specialists in waste management.

A most discouraging development has been the publication of reports, since early January, of the reappearance of uncollected waste, especially in Surat (Shah 1995). If the reports in *Times of India* and *The Week* are accurate, the garbage piles in parts of the city are growing to pre-September levels and the city seems as dirty as ever. The most visible signs of concern were two minute television lectures on the virtues of cleanliness. An American engineer said the city was cleaned up straight after the scare but three months later had "gone back to square one" (Associated Press, Dec. 3). The observation was underlined in *This Week* in late February (Shah 1995).

Against these reports, one must weigh that of Captain Velu of Civic Exnora, who says that the Surat Municipality has received many proposals from engineering firms and voluntary organizations for assistance in cleaning up the city (Exnora International 1995). Obviously, it takes time for a city of this size to create an effective waste management system. The administrator of Ahmedabad, an IAS officer, has been made administrator of Surat in addition, and spends part of each week there.

In Delhi, most people to whom I spoke pointed out that collection services were reverting to the usual level and illegal throwing of wastes into vacant lots was recurring. Dr. Florian Steinberg has commented that the cleanup efforts came to a halt once the panic had subsided (Steinberg 1995). It should be noted, though, that the *Times'* article of January 2 did report on improvements in solid waste management in Calcutta, Bombay and some a few other cities. Now, in April, it is difficult to glean any information about action on waste management and sanitation in the major cities.

SIGNS OF AWAKENING --APRIL 1995

After this discouraging period, in early part of 1995 the Ministry of Health, with WHO assistance, hired a consultant to work under a group selected to formulate a "comprehensive national programme on sanitation and environmental hygiene. The Union health secretary was designated as a convenor of this group which consisted of the secretaries of ministries of Rural Development, Urban Development, Environment and Forests and the chief secretaries of Maharashtra, Tamil Nadu, U.P. and West Bengal, the director-general of Health Services and adviser (Health) Planning Commission.

The national consultant assembled reviews of past activities of concerned ministries and prepared a backgrounder for a workshop to formulate a national programme on "sanitation and environmental hygiene along the lines of a technology mission."

The workshop held on April 10-12, 1995 consisted of five concurrent group discussions focusing on : urban low cost sanitation; urban wastewater management; urban solid waste management; rural environmental sanitation; strengthening of health surveillance and support services.

The final report of the workshop is not yet available. The cabinet is later to decide on the specific coordinating body for the massive undertaking recommended.

Commenting on these recent developments, Mr. Jan Pospisilik, a Canadian member of the Promotion of Environmental Health Programme at the WHO/SEARO in New Delhi cautions patience. He thinks the pessimistic tone of this paper may not be warranted, yet. We may see significant action on environmental health in due course (Pospisilik 1995).

LOW PRIORITY OF SOLID WASTE MANAGEMENT

Many people, however, wonder whether there is the collective will and the leadership necessary to begin a multi-faceted drive for waste management, a sector that has been given very low priority in India since independence.

While India has most of the ingredients necessary to pursue effective urban waste management policies (capacity to organize voluntary groups for local environmental action, habits of reuse and recycling, ability to manufacture low-cost and appropriate equipment, sufficient workforce and supervisory officers, ability to raise revenue locally, private sector interest in supplying services, and so on) there is a serious lack of expertise and leadership in this sphere.

The number of specialists working in urban solid waste management is quite pitiful; the subject is not taught or researched except in a passing way in institutions of higher education. At the national level, practically no attention is paid to the fundamentals of waste management; scarce funds have been allocated to fanciful schemes for energy recovery from waste that have turned researchers in the field away from basic practicalities. Solid waste management remains isolated from relevant specialities in urban management. (The lack of accessible basic data on quantities of wastes and their nature was underlined when reporters sought such information during the plague scare. See *The Week*, Oct. 9).

Competent local government officers with a practical knowledge of the local waste problems rarely stay in waste management positions for long enough to be effective. Waste management departments are constrained by strongly organized workers on the one hand and lackadaisical elected councillors on the other, in a context of financial constraint. Local voluntary organizations that have taken up solid waste management as a particular cause struggle with very limited funds and so cannot attract much citizen participation. Initiatives from the WHO to assist in the preparation of educational materials have foundered on the defensiveness of the Ministry of Urban Affairs.

Where there should be institutional and attitudinal structures linking national and local action for waste management, there are lacunae. This makes it very difficult for concerned citizens to act for local

improvements; they cannot find responsive local or national officers to heed their calls for action. A sense of futility is one reason cited for people turning to "business as usual," even as their lack of confidence in public administration fed the panic at the announcement of plague in Surat. The need is for leadership that can address technical requirements for adequate funding and equipment and workforce management on the one hand and can inspire public confidence and participation on the other.

Experts in urban planning, such as Dr. Florian Steinberg of the Indian Human Settlements Management Institute, continue to call for the rejuvenation of the sanitation and solid waste systems of Indian cities, warning that India's hopes for substantial foreign investment will be dashed if the cities cannot be cleaned up. This requires sufficient investment, the willingness of the public to pay for waste services, and a reversal of the apathy of public officers and general public (Steinberg 1995). His views are supported by organizations such as the Voluntary Health Association of India.

In the early years of this century, following the devastating waves of plague which started in Bombay in 1896, one of the moves of the colonial administration was to set up city improvement trusts. Part of the motivation was to by-pass municipal councils which were considered too politicized or too ineffective to take practical action for urban improvement (Furedy 1978). In the 1990s, by-passing is likely to take the form of privatisation to supply services. Nevertheless, a way has to be found to reinvigorate local municipal bodies so that they are able to pursue the amelioration of poverty and the delivery of basic needs to the cities through a variety of strategies.

CONCLUSION

Considering the amount of attention given to garbage in the coverage of the plague outbreak, in India and internationally, it is extraordinary how difficult it is six months later to find out what positive steps are being taken to address specific factors in urban cleanliness. One can ferret out information on changing attitudes, and efforts at cleaning up, but it has to be ferreted out; there is no widespread reporting of these efforts or discussion of changes in national, state and voluntary agencies. The international media, too, have not tried to track developments. I gleaned information, when in Delhi in January, in a general atmosphere that down-played the seriousness of the plague, and by implication, urban conditions. I wrote dozens of letters and faxes to government officers, voluntary agencies and academics, but I heard only from the WHO, the Voluntary Health Association of India, UNICEF and one or two individuals.

As I write this, however, there are encouraging signs of resolve at the national level, and in key cities, and one hopes that this is the beginning of substantial efforts to bring basic services in Indian cities to the level expected for a major modern nation.

ENDNOTES

1. Research for this paper received a small grant from the Division of Social Science, York University. I wish to thank in particular Jan Pospisilik of WHO/SEARO (Delhi) for information about the national action of April; Jude Carlson (Calgary) for many press cuttings and Girija Tikoo (Delhi), Dr. Lilavita Krishna (Kanpur), Dr. Shukla (New Delhi), Dr. N. Sehgal (New Delhi), Prof. Rama Baru (New Delhi), Dr. Florian Steinberg (New Delhi), Dr. Ananda Bhide (Nagpur), Dr. Ian Catanach (Christchurch), Dr. Pratiba Mehta (Toronto), and Prof. Roy and Rosemary Wolfe for information or comments.

2. In his report on the plague in Bombay (1896-1899), Captain J. K. Condon of the Indian Staff Corps looked for "ethical" benefits, which he described thus: "The devoted labour of so many, voluntarily given to combat the pestilence, had undoubtedly done much to prove to the masses that their sufferings and hardships are both realized and sympathized with: and the close relations between the different races entailed by disinfection, search parties, etc., etc., have, as undoubtedly, thrown down many a barrier of caste and prejudice -- destroyed many a misunderstanding of long existence." He also saw as a benefit: "The stringency and severity of most of the plague measures ... will tend to render the people less sensitive to minor measures which Government may find it necessary from time to time to enforce on other grounds." (Condon 1900, p. 14). Assessing these anti-plague measures in 1993, Arnold says that they "provoked the greatest upsurge of public resistance to Western medicine and sanitation that nineteenth century India had witnessed...The plague episode seems to present...a tale of alienation and resistance." (Arnold 1993, p. 211).

3. Dr. Ian Catanach (Canterbury University) questions whether there is a direct relation between accumulated garbage in cities and a risk of plague. He points out that although garbage does encourage rodents, it does not necessarily mean more black rats (*R. rattus*) or fleas of the variety (*Xenopsylla cheopis*) which normally act as intermediaries between rats and humans in the spread of plague. In some parts of India the black rat population seems to be decreasing, and the plague risk is also probably decreasing (Catanach 1995). The issue of the relation of rats (and other rodents) to garbage should be carefully investigated in India and other developing countries, not only because of the possible plague threat in unserved areas of cities but because decentralized composting is now being promoted as a means of waste reduction. In 1991, I wrote to the World Health Organization in New Delhi suggesting that studies be undertaken and received the reply that there were no funds for such studies. The WHO has, however, funded other research related to waste management, so one must conclude that they judged this issue to be unimportant at the time. They may be having second thoughts. At the moment, however, the vector control department at the WHO/SEAR is not operating.

4. It is ironic that in Calcutta the measure designed to bring more efficiency to municipal management, together with public co-operation, namely changes made in the size and elected membership of the Corporation of Calcutta through the Calcutta Municipal Act of 1900, was so unpopular with those who had been the main supporters of ratepayer-based municipal management that a virtual boycott of the municipal system was sustained for some years (Furedy 1978).

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APPENDIX

Excerpts from *History of the Plague in Bombay*, by B. F. Patel, first master, Elphinstone High School. (Bombay: Caxton Works. N.d.).

...

The local officers seemed bent
A general panic to prevent;
The people they would make believe
They had no cause to fear or grieve,
"No plague! no plague!" they still maintained,
All outside counsel they disdained....
For long they wrangled o'er the name;
'Twas long before conviction came;
But fact for trifling all too stern,
Made them to plainer terms return....
Before the city fathers came
This subject with a dreadful name;
Incredulous some stood aloof,
As waiting for yet further proof.
Some doctors of the Mandvi ward
Tried hard to put them on their guard;
They cited cases by the score,
Prompt action urged,--what could they more?
The Corporators now propound
Conflicting theories full of sound,
Each one attempting now to preach,
Himself in dark, the rest to teach!
No single head of light and leading,
To show a course of straight proceeding.
In flushing drains and fumigation,
They seemed to put their whole salvation;
A weak attempt at segregation,
Creates much trouble and vexation....

Oh! Filth, theme all unmeet for verse,
Our over-crowded city's curse,
What fatal vigour though hast shown;
How made a smiling city groan!
A fertile soil where seeds of woe
Luxuriant, like weeds they grow;
For filth and plague, lo! hand in hand,
Like loving helpmates scour the land!
Filth in the humbler lanes and streets,
Filth in the poor man's house one meets,
Filth in his clothes, filth in his skin,
And death the wages of the sin! ...
But if the people now can see
How filth's allied to misery,
And mend their ways, the plague indeed,
Will then have sown a precious seed.
Another lesson Plague has taught,
And worthy too of serious thought:
The dwellings of the poor all round,
Unfit for human use were found...
The portion of the labouring poor!
Small credit to this city sure,
To citizens who role in wealth,
And guardians of the public health.

Times
of
India
Oct. 4
1995

Plague cell spends another busy day



The Plague Combat Cell at *The Times of India* has received some 300 calls since Sunday. Many of them have been for information about the disease and many for assistance in removing garbage the civic authorities have allowed to pile up. The picture shows one of the combat cell's team at work in Greater Kailash on Tuesday.

The Hindu
Oct. 9.
1995



The Chief Minister of Delhi, Mr. Madan Lal Khurana, wielding the broom in Ajmere Gate area on Sunday.



*Happy hunting ground: the migrant labour colony at Shivr Nagar, Katargram
Dawn to Earth Oct. 31 1995*