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The Influenza Epidemic of 1918 and the *Adivasis* of Western India

Abstract

The influenza epidemic of 1918 was the single worst outbreak of this disease known in history. This article examines an area of western India that was affected very badly – that of a tract inhabited by impoverished indigenous peoples, who are known in India as *adivasis*. The reasons for this are discussed. Some oral accounts help to bring out the enduring memory of that terrible time. The general health of the *adivasis* and the existing medical facilities in this area are examined. Attempts to check and treat the disease by the colonial government and its doctors, as well as missionary doctors and other non-governmental agencies, are considered to see why they had so little overall impact. Some comparisons are made with the fate of indigenous people in other parts of the world during the epidemic, in particular with the Inuits of Alaska.

The influenza epidemic of 1918 is considered to have been one of the most devastating pandemics in human history. More people died from it than there were casualties in the entire First World War, and it was the greatest single demographic disaster of the twentieth century. It appears to have started early in 1918, spreading in three waves around the world.¹ The first in March and April 1918 spread rapidly through the war zone in Europe, and also in Asia and North Africa, reaching Australia in July. The mortality rate was fairly low. The second and highly lethal outbreak began in late August 1918 and there was a third

less virulent one in 1919. The unusual feature of this as compared with other influenza epidemics was that the highest number of deaths were of those who normally survive an influenza infection – that is, the young and fit, and particularly males in the twenty to forty year-old age-group – rather than those who are usually most at risk from the disease, namely children, the old, and those weakened with existing medical conditions.² Also, there was no straightforward correlation between poverty and a high mortality. In the USA, for example, African Americans had lower mortality rates during the pandemic than whites, even though they generally suffered much higher death rates from respiratory and other such diseases. Native Americans, however, suffered worst of all.³ The reasons for these mortality patterns are still not well understood, though various propositions have been put forward.

Although there is considerable contemporary documentation of the epidemic, for many years afterwards it was not studied in any depth by historians.⁴ Compared to other great epidemics, such as the Black Death, and to events that were contemporary with it, such as the mass slaughter and traumas of the First World War and the revolutions and displacements that followed in its wake, the influenza epidemic received little attention. This began to change in the wake of new epidemiological discoveries from the 1960s onwards. In particular, Robert Webster and Graeme Laver's discovery of the way in which the influenza virus migrated from birds, mutating into a human form, transformed understanding of the epidemiology of the disease. They argued that this process was an ongoing one, producing new strains of the virus through 'antigenetic drift'. Although most such mutations proved relatively mild, virologists warned that this was not always going to be the case. A future epidemic on a par with that of 1918 – or perhaps worse – was

predicted to be almost certain at some time or other.⁵ These findings provided a wake-up call for historians. The first of a new wave of studies appeared in 1974, with Richard Collier's *The Plague of the Spanish Lady*. This was based mainly on interviews with survivors from 29 different countries, and although anecdotal, brought out how people experienced the epidemic. It failed, however, to analyse the dissonance between such graphic memories and the official and academic silence on the pandemic.⁶ A more scholarly study followed in 1976 by Alfred W. Crosby, *Epidemic and Peace*. It was republished in 1989 as *America's Forgotten Pandemic: The Influenza of 1918*. In his preface to this new edition, Crosby noted how the hubris surrounding the supposed triumphs of medical science had ensured that until the 1960s the epidemic of 1918 was regarded – when it was at all – as an aberration that was largely irrelevant to our present condition. This had all changed as people began to understand how 'pathogens...seem to the general public to have become nastier faster than scientists have become smarter'.⁷ Now, it seemed a harbinger of a dark future rather than an oddity from the past. By the 1990s, the trickle of studies on the epidemic became a firm flow, with the current becoming ever stronger in the subsequent decade.⁸

Despite this, the area that suffered the highest mortality of all in 1918 – India – has hardly been examined at all. Indeed, there are only a couple of articles, by I.D. Mills of 1986 and Mridula Ramanna of 2003. Otherwise, the major histories of public health in India – notably by Arnold and Harrison – stop before the First World War and say either little or nothing about the epidemic.⁹ Both Mills and Ramanna focus on Bombay Presidency, making widespread use of an excellent source for the epidemic in this region – the *Annual Report of the Sanitary Commissioner for the Government of Bombay* for the year 1918. This

contained a detailed survey of the outbreak, along with extensive statistics on mortality.¹⁰ Together, this report and the two articles show that the disease appears to have entered India through Bombay port at the end of May 1918, becoming epidemic in Bombay Presidency in June. At this juncture – as elsewhere – it was relatively mild, with most victims recovering. It spread to other parts of India by August 1918. The second, and much more virulent wave, began again in Bombay Presidency, and was well established by September. Official figures at that time put the death-rate at 5.3% of the population of the presidency, though Mills estimated that about half the twenty million people of the presidency were infected, and that 1,062,852, or 10.3% of the population died. He based this estimate not on recorded deaths (which were usually much under-reported in India) but on his own projections relating to population growths based on the census reports of 1911 and 1921.¹¹ Mortality rates were particularly high in certain pockets of the interior of the Presidency. The coastal districts were in general less hard-hit. Urban areas were badly affected; in Bombay Presidency the urban death rate for 1918 was 9.5% of the population, as compared to the rural death rate of 6.9%. In normal years, there was no great difference between urban and rural death rates.¹² As elsewhere, a feature of this phase of the epidemic was the high incidence of death among those aged twenty to forty.¹³ Unlike in the West, however, women in India suffered more. In Bombay Presidency, for example, 7.4% of all women in the 15 to 40 age-range died, compared to 5.7% of all men.¹⁴ Also, in contrast to the West, the poor suffered disproportionately. In Bombay City, for example, low caste Hindus had a death rate of 16.7% in 1918, in contrast to death rates of 2.9% for Europeans, 2.9% for Parsis, 4.2% for Anglo-Indians, 5.4% for Indian Christians, 5.3% for high caste Hindus, and 6.1% for Muslims.¹⁵ The millworkers, who were mostly low caste Hindus, were badly affected – and this was said to be because they tended to be poorly-fed, and

lived in badly-ventilated rooms with a smoky atmosphere filled with coal and dust.¹⁶

Outside the cities, the people indigenous to the hill and mountain regions – the *adivasis* – suffered disproportionately – between 1911 and 1921 their population in India as a whole fell from 9,593,695 to 9,072,024, or by 5.4% – while the overall population of India increased during the same period by 11.3%. The decline in the *adivasi* population was caused chiefly by the influenza epidemic of 1918.¹⁷

In her study of the epidemic in Bombay Presidency, Ramanna describes the way that the disease spread rapidly through western India in 1918, and the measures adopted by colonial medical officials to try to contain it – largely without success. She points out that good nursing provided the best hope for a cure, but that there was a paucity of trained nurses in Bombay Presidency. She examines the response by voluntary groups, arguing that such public relief work was confined mainly to the larger cities. She states there was an ‘absolute lack of any public health organisation in rural areas’, so that the rural population was left helpless in the face of the epidemic. She does not however provide much detail on exactly how the rural population fared, or explain why some rural areas were harder-hit than others.¹⁸

My own experience from research in the mountain tracts that run between southern Gujarat and Maharashtra suggest that there are many histories yet to be written of the epidemic in India. When conducting interviews in villages in the early 1980s, some older *adivasis* had told me about a fearsome epidemic that devastated their society when they were young. It was known as ‘*mānmodi*’. Large numbers, I was told, had died suddenly. Never before or since then had so many died in such a short space of time. In some

households, everyone was wiped out. The *bhagats* (diviners, exorcists and herbalists) had tried to counter it by bringing out the spirit that was causing the sickness. For the most part they failed in this, and many lost their confidence in the *bhagats* at that time. I was told that '*mānmodi*' had occurred not long before the coming of the goddess, or Devi, known as Salabai. This was the topic that I was researching at the time, and later wrote about in a book.¹⁹ The coming of the Devi is dated in the colonial and other records as occurring in 1922-23. This convinced me that '*mānmodi*' – which according to the *adivasis* occurred just a few years earlier – was the great influenza epidemic of 1918.

Navsubahi Patel of Chankal village in the Dangs said that people would be sitting, and they would start shaking all over and die. Some went mad, and fell into water and died. Some jumped up and down on the ground very vigorously. Some died of fever. He, a youth of about fifteen at that time, helped to dispose of the dead. At first they had buried them, but soon were overwhelmed, and began throwing the bodies over cliffs. He had helped dispose of sixty-three bodies in these ways. No home escaped. This was the case all over the Dangs.²⁰ Govinda Karbhari of Saputara in the Dangs said that of the seventy-five inhabitants of his villages, twenty-five had died in *mānmodi*. In some villages, half the population had died, in others three-quarters. The *bhagat* was helpless, and they were so scared that they had fled the place. This went on for about one-and-a-half to two months.²¹

Memories of the epidemic remained alive in these villages even in the twenty-first century. When my colleague Gauri Raje carried out research in some *adivasi* villages in eastern Surat District in 2005, she was told of an epidemic that they knew as '*dhani pani*'. As with '*mānmodi*', it was said to have occurred just before the coming of the Devi. They

considered it a landmark in their history as so many had died. Their parents had told them about it, as family members had succumbed. The symptoms were head thrown back, rigid limbs, high fever and delusions, and death came in a day or two. People who recovered were immune to any disease thereafter. Large numbers died in each village, and whole villages were evacuated. It affected the entire region.²²

Oral histories such as these, collected many years after the event are valuable for the way they bring to life the intense emotions stirred at such a time, such as the sensation of dread and social threat, helplessness in the face of the unknown, and the desperate means employed to try to deal with the danger, such as fleeing a village. They provide what JoAnn McGregor and Terence Ranger have called an 'alternative narrative' that enriches the existing medical history and which also can be set against and contrasted with the official and other narratives that come down to us through the archives.²³ As Lucy Taksá has shown in her admirable oral history of the epidemic in Sydney, Australia, such accounts bring out the multiple ways in which the epidemic was experienced, described and understood. They reveal the partiality of the official historical account, allowing us to reach toward different interpretations of the event.²⁴ No such oral histories have however been attempted for India – a lacuna that the present article will attempt to rectify for one region at least.

My aim is to focus on the epidemic of 1918 in the areas of southern Gujarat and the immediately adjoining parts of Maharashtra that have large *adivasi* populations. As I have indicated already, the topic first came to my attention through the interviews that I conducted there in the early 1980s. At the time, I knew very little about the epidemic, and as it was not a part of my wider research agenda, I put it aside as a subject that I could

return to at a later date. Once I did this many years later, I began to discover that the *adivasis* appeared to have suffered particularly badly in comparison with other peoples of the plains of southern Gujarat. I wondered why this was the case. What made the difference at such a time of extreme medical crisis? What was the state of medical facilities in these tracts, and could better facilities have saved lives? Starting from the oral histories, I sought to answer these questions by examining the written evidence from that time – as produced by both official and non-official agencies (notably missionaries).

Who were the '*adivasis*' of India? They tended to inhabit the hilly and forested regions of the subcontinent. Many lived from hunting and gathering combined with shifting agriculture. Some were found in adjoining plains regions, where they practised a more settled peasant agriculture – sometimes independently, sometimes as tenants or labourers for non-*adivasi* landlords and usurers. Such peoples were described by the British as 'aboriginals' or 'early tribes,' being characterised, so it was said, by their 'clan'-based systems of kinship and their 'animistic' religious beliefs. Sometimes, they were defined in terms of their habitat, as 'jungle tribes'. By classifying them in these ways, the British created a conceptual unity that such peoples had not hitherto possessed. From the 1930s onwards they claimed, assertively, to be the 'original inhabitants' of their tracts, calling themselves by the Hindi term that expresses such an idea – that of *adivasi*. I have used this term in this paper for the sake of convenience, even though it was not yet in currency during the epidemic of 1919. In India, the largest concentrations of such people were in the northeast. Elsewhere, many were found in the central-eastern region, in what is now the state of Jharkhand and areas adjoining to it in Bengal, Orissa and Bastar, and in a section of

western India that spans the border regions between the four modern Indian states of Rajasthan, Gujarat, Madhya Pradesh and Maharashtra.²⁵

The *adivasis* that form the subject of this article inhabited a belt that stretches nearly as far as the city of Bombay in the south, to the Narmada River in the north, to the districts of West Khandesh (now Dhule) and Nasik in the east, and to the Arabian Sea in the west (see map below). In terms of terrain, they inhabited the hills and forests of the Sahyadri and Satpuda mountain ranges and the immediately-adjointing plains areas. In the past, they were classed by non-*adivasi* Indians as belonging to two main groups – the ‘*Kaliparaj*’ (‘black people’) and the Bhils. The former were generally considered to be less aggressive than the latter. The ‘*Kaliparaj*’ were divided in turn into a number of separate communities, such as the Chaudhrys, Dhodiyas, Gamits, Konkanas, and Varlis.

II

Before examining the epidemic in this *adivasi* region, I shall say something about the nature of the epidemic, how it was understood and treated at the time, and look briefly at a well-documented case in which indigenous people were severely hit by the pandemic – that of the Inuit in Alaska – to help to draw out some lessons about the response to the crisis more widely.

Although the symptoms of influenza in 1918 differed throughout the world, its most frequently reported indicators were severe headaches, body pains and fever; with coughing of blood and bleeding from the nose. Death was often caused when the disease affected

the lungs, causing massive pulmonary oedema or haemorrhage, turning the lungs into sacks of fluid and thus effectively drowning the sufferer. A particular feature of the malady was the 'heliotrope cyanosis' (a term coined at the time), in which the face of victims turned blue as they in effect drowned in the fluids that accumulated in their lungs. An attack normally lasted 2-4 days. However, death could be sudden, even within a few hours.²⁶ In 1918, the epidemiology of influenza was poorly understood. Since the 1890s, it had been held that influenza was caused by a bacillus, identified as Pfeiffer's bacillus. Little was then known about viruses, and much of the research into the disease in 1918 was focussed in the wrong direction.²⁷ The influenza virus was in fact only identified in 1933, and it was found that its surface antigens change from epidemic to epidemic.²⁸ This made it hard to classify the 1918 virus retrospectively. Later research on the corpses of victims frozen in the Arctic tundra suggest that it was most likely a particularly lethal form of the H1N1-subtype influenza A virus that had mutated from an aggressive bird flu.²⁹ It is not yet known precisely why it caused such high mortality among those in the prime of their life.³⁰

In Bombay, the medical establishment tried to establish that Pfeiffer's influenza bacillus was the cause of the disease. Investigators at the Bombay Bacterial Laboratory had difficulty in isolating the bacillus, but they believed that it was 'one of the most constant elements in the bacteriology of the disease and it appears to thrive best in symbiosis with other organisms such as the pneumococcus and streptococcus.' A combination of the three was held to account for the particular virulence of the outbreak in September-October 1918. In particular, pneumonia that generally occurred on the second or third day of the illness frequently proved life-threatening, and it was believed that it was likely to be especially fatal in the case in patients who failed to take proper rest as soon as they fell ill.³¹ Despite the

epidemiological uncertainty, it was felt that a vaccine was needed, and one was prepared and used for the military for preventive purposes only. The constitution of the vaccine was only decided on at a conference in Delhi in December 1918, and it was then manufactured and provided free of charge – after the most lethal phase of the epidemic had passed.³²

Although many medics knew at the time that there was no effective drug-remedy for influenza, others were not short of recommendations – often conflicting. Thus, while many Indian doctors advised daily doses of the wonder-drug of the day, quinine, the Surgeon-General of Bombay warned against it. Particular doctors advocated a wide range of remedies, such as belladonna, laudanum, camphor, creosote, a mixture of iodine and chloroform and the like. Many Indian medics, as well as Ayurvedic practitioners, dispensed indigenous medication, such as powdered long pepper, mixed with ginger juice and honey. To prevent congestion and bronchitis, they prescribed *tulsi* and turmeric in milk. The Bombay Government itself disparaged the use of such indigenous remedies.³³ People were also advised to take preventive measures, particularly the wearing of face masks, irrigating their noses with warm salt water, disinfecting their houses, avoiding congregation in crowds, and refrain from smoking tobacco and consuming alcohol. In practice, many resorted to prayer and patent medicines. In fact, probably the most effective treatment for sufferers at that time was the prescription of aspirin to lower the body temperature, complete bed-rest and good nursing care.³⁴

The Sanitary Commissioner's Report for Bombay noted that a previous bout of influenza did not appear to confer immunity in 1918. It was argued that certain individuals were by their nature more susceptible to the infection, but that this was aggravated by 'overwork, lack of

food, bad housing and overcrowding.’ The poor monsoon of that year had also meant that people were malnourished and had less resistance. The report also noted the fact that in general, regions lying close to the Arabian Sea had lower mortality than those inland. The reason for this was not however clear. The report also mentioned that female mortality was in general considerably higher than male mortality. This gender difference was not found to be the case in all age categories, as more male babies under one year and more males in the 40 to 60 age group had died. The report argued that women who had domestic responsibilities had been unable to take the necessary rest when ill, having to cook and tend to other members of the family who were ill. This was compounded by ‘their continued indoor existence in the average ill-ventilated house’, which made them more vulnerable to the pneumonia that was such a killer.³⁵ The reports did not take note of the fact that women from poor families tended to be malnourished – more so in a year of crop failure – and also more likely to suffer from anaemia and other debilitating conditions. A different report of 1920 noted that pregnant women were particularly at risk, and that in almost all cases those who contracted influenza aborted and died of post-partum haemorrhage.³⁶ The high female mortality was a feature of the 1918 epidemic in India – elsewhere, male mortality tended to be strikingly higher.³⁷

The particularly high mortality rates from influenza suffered by indigenous and aboriginal peoples throughout the world in 1918 has been brought out in a number of studies. This was the case of Native Americans and the Inuits of northern Canada and Alaska, and in New Zealand the epidemic killed more Maoris than people of European origin. It had a devastating effect in many Pacific islands; in Fiji about 5% of the population died, in Tonga 10%, and in Western Samoa 25%.³⁸ In Alaska, some isolated Inuit villages had death rates of

up to 85% of the adult population.³⁹ In some cases, the relative isolation of indigenous people made them more vulnerable to such infection; this was not however the case with most, as there had been widespread contact with outsiders for many years. Crosby's study of the Alaskan case brings out just how important the reaction to the crisis by the authorities and concerned and well-informed citizens could be.

The epidemic began in Alaska in October, just before the winter freeze cut off the interior, so that it spread rapidly from seaports up the rivers that provided the main means of access to the interior. The US authorities put a lot of resources into providing health care, establishing emergency hospitals and hiring extra physicians and nurses, who were sent to places where they were needed most. In the more remote areas that lacked such care, death rates proved to be much higher. The epidemic arrived in many interior settlements just as winter was closing in, isolating them almost completely as it raged. Cases were reported of people panicking and wandering about spreading the disease. There was nobody to perform the life-saving tasks, such as cutting firewood, and providing food (the people were too weak to hunt the moose). Cabins became dirty, and vermin increased. People became demoralised and merely sat in their cabins waiting for death. They no longer lit fires, and many froze to death. When a number were rounded up and placed in a single large, heated building where they could be cared for better, several responded to what they saw as incarceration in a deathhouse by hanging themselves.⁴⁰ Crosby notes that where there was strong leadership in an Inuit village by people such as schoolteachers, survival rates were much better. Meetings were held to explain what was happening and ways in which people might avoid infection, and arrangements were made to provide food and firewood for infected families.⁴¹ The lesson here was that although the cause of the

pandemic was not understood, and although there was no wonder-cure, infection-rates could be kept down through quarantine, and there was a better chance of survival if the sufferer had complete bed-rest and good-quality nursing. As I shall argue, these conditions were lacking for the most part in the more remote *adivasi* tracts of western India.

III

If we compare mortality rates for districts, as given in the *Annual Report of the Sanitary Commissioner for Bombay Presidency, 1918*, there does not appear to be any obvious statistical correlation between high mortality and the districts with larger numbers of *adivasis*. Sholapur District was recorded as having the highest mortality rate of all districts in the Presidency – 8.8% of the population.⁴² Nasik followed, with 7.8%, then West Khandesh with 7.3%. Other districts had mortality rates under 7%.⁴³ While Nasik and West Khandesh had sizeable *adivasi* populations in their western regions, Sholapur – with the highest of all mortality rates – did not. Also, some districts with large *adivasi* populations had below-average figures – such as the districts of Thana (4.4%), Panchmahals (3.5%), and Surat (3.4%).⁴⁴ Such averages concealed, however, variations within each part of a district. The *Annual Report of the Sanitary Commissioner for 1918* also provides breakdowns for sub-districts (*talukas*), and these can be used to pinpoint the areas with highest mortality with greater precision. The highest mortality rates of all were found in Sakri and Baglan Talukas, where respectively 16.8% and 15.8% of the populations died. 63% of the population of Sakri were *adivasis*, while the figure for Baglan was 58%. These two talukas were in the Sahyadri Mountains adjoining the Dangs – the area that I had first encountered a strong and abiding popular memory of the epidemic of 1918. Kalwan, which

bordered both the Dangs and Surgana State had a mortality rate of 13.3%, and Peint, which adjoined Dharampur State, had a mortality rate of 14.8%. In the report, there are no mortality figures for the princely states, but in the Dangs the population dropped by 16.5% and in Dharampur by 17.2% between 1911 and 1921, and in both cases the main cause was said to be the epidemic of 1918.⁴⁵

Mortality rates in the British-ruled talukas of Surat District were lower, with an average rate of 4.2% for its rural areas and 2.5 % for its three largest towns. The highest rates were found in the talukas that adjoined the forests and hills of Dharampur, namely Chikhli (6.0% mortality and 53% of the population *adivasi*), Valsad (5.5% mortality and 36% *adivasi*), and Pardi (5.2% mortality and 57% *adivasi*). Besides Chikhli and Pardi, the only other talukas of Surat District with *adivasi* populations over 50% were Mandvi and Valod, and they had mortality rates that were in line with the district rural average. Significantly, I did not come across any memories of the 1918 epidemic while carrying out extensive research in the *adivasi* villages of Mandvi and Valod in the early 1980s.

I have been unable to find mortality rates during the epidemic for the talukas of Navsari District of Baroda State. All we have are the census figures. If we examine the Baroda State Census report for 1921, we find that the population of Songadh Taluka had declined by 2.8% since 1911, Mangrol and Vajpur (the two were counted together) by 2.7%, while Vyara recorded a small increase of 1.4%. Mahuva, another largely *adivasi* taluka recorded a decline of 3.2%. In the other four talukas of Navsari District, which had a far lower concentration of *adivasi* in their population, the population increased by 5.0% between 1911 and 1921. This points to relatively high mortality in the *adivasi* areas of Navsari

District – and, significantly, these lay for the most part close to the foothills of the Sahyadri Mountains. The taluka figures for Navsari are however significantly lower than the rates found in the more mountainous *adivasi* regions to the east.⁴⁶

Continuing in a southerly direction, we find that in Thane District there were two talukas with high *adivasi* populations – Umargam (3.2% mortality rate and 65% *adivasis*) and Dahanu (4.1% mortality rate and 41% *adivasis*). In addition there was Jawhar, a princely state in the mountainous interior of the region that was largely surrounded by Dahanu Taluka, in which 73% of the population was *adivasi* and the mortality rate was a higher 7.1%.⁴⁷

These statistics, taken together, suggest that mortality rates were generally lower in the *adivasi* areas of South Gujarat and Thane District that lay in the coastal plains. Pardi Taluka was an exception to this rule, though it had a considerable amount of its territory in the interior on the borders with Dharampur, and this region may have accounted for the higher mortality rate of this taluka as a whole. To the immediate south of Pardi, Umargam Taluka, which lay mostly in the coastal plain, had a relatively low mortality rate (3.2%) that was comparable to the *adivasi*-dominated talukas of the plains of Surat District. The general finding is thus that the worst-affected *adivasi* areas were located in a broad line that stretched from northeast to southwest along the spine of the Sahyadri range and its adjoining foothills in Gujarat and Maharashtra. In this area the particularly virulent strain of the disease that swept inland Maharashtra affected the *adivasis* of the mountain villages worst of all. I shall now go on to say something about the social, economic and medical

history of the *adivasis* of this region in order to try to understand why some of them suffered so badly in 1918.

IV

In the past, the *adivasis* of southern Gujarat were known as the '*Kaliparaj*', or 'black people'. This was a disparaging term given to them by the high castes, who were known locally by contrast as the '*Ujliparaj*', or 'white people'. The *Kaliparaj* were for the most part poor subsistence farmers. In the more fertile plains regions of southern Gujarat they lived in settled villages and cultivated fixed plot of land, while in the forested and hilly tracts in the east crops were grown both in fields in the valleys and through shifting slash-and-burn cultivation on the hilly slopes. The *adivasis* of the hilly tracts tended to move their places of settlement in periodic cycles, finding fresh land to cultivate. They had in general suffered badly from colonial rule. The British had appropriated large tracts of the forests that had previously controlled so that state foresters and timber merchants could exploit the natural wealth of the woodlands.⁴⁸ Those so displaced were encouraged to settle down as full-time farmers. The commodification of farmland by the colonial state had in turn allowed landlords, usurers and liquor dealers to move in and expropriate large areas of their land, leaving them as tenants or agricultural labourers.⁴⁹

Their hard conditions of life reflected on their health. This was remarked on by colonial officials, missionaries, and Indian outsiders alike. Writing in 1897, E. Maconochie of the Indian Civil Service noted that the health of the '*Kaliparaj*' was in general poor as compared

to the high caste people who lived in the same area. This was due to their 'coarse and scanty food, bad water and insufficient clothing'. They were 'generally of inferior physique' to members of the higher castes, probably because of the malaria that they more than others suffered from.⁵⁰ The focus on malaria – or 'fever' – was a longstanding trope in colonial commentary on the health of the *Kaliparaj*. In the nineteenth century, this was believed to be caused by what a colonial official described in 1839 as 'the pestilential vapours of this unsettled land'.⁵¹ A British official, writing in 1886, noted the 'inferior and wretched' sanitary condition of the villages of Mandvi Taluka, stating that: 'The inhabitants are generally dull looking with their pale faces, enlarged abdomen and emaciated limbs and their health on the whole giving proof of it being below par.' Women, he said, were generally in worse health than men. The connection between malaria, an enlarged spleen and anaemia was pointed out by missionary doctors working in the tract in 1926.⁵² They called this 'malarial anaemia', but more recent investigations in this area have discovered that there is widespread sickle cell anaemia amongst the *adivasis*. While providing some protection against malaria, it is also very debilitating. There is also a close connection between female nutritional anaemia and maternal and foetal morbidity and mortality.⁵³ An Indian anthropologist who carried out research in the area in the late 1920s remarked on the very high infant mortality rate in the *adivasi* village that he studied – with 52.7 % of all deaths there being of children under five. 24.4 % of all children failed to survive to their fifth birthday.⁵⁴

In all this, there was a clear link between the material poverty of the *adivasis* and their poor health. This was a fate suffered by such people elsewhere in India. P.O. Bodding, a missionary ethnographer whose wife was a doctor carried out a detailed study of the health

and therapeutic practices of the Santal *adivasis* of eastern India in the early twentieth century. He noted that they suffered from most diseases found in India at that time. He was told by his Santal informants that they had not suffered from syphilis, tuberculosis or leprosy before the middle of the nineteenth century. Although he felt that this was perhaps an exaggeration, he suggested that their former isolation may have protected them from many infections. By the twentieth century, however, all of the three above-mentioned diseases had become widespread in the community. The most prevalent maladies of all were malaria, then skin diseases, bowel complaints such as dysentery, eye diseases, pneumonia, and rheumatism. They also suffered badly in epidemics, fearing cholera and smallpox in particular.⁵⁵

Government officials commonly argued that this could all be remedied through forest clearance and agricultural development in *adivasi* villages. A senior tax officer employed by the Baroda State Government (which ruled a large tract of territory in this region, often interspersed with the British-held areas) stated in 1906 that the poor social and economic conditions of the *adivasi* tracts was caused by poor health, and particularly malaria, as mosquitoes thrived in the dense vegetation. He held that if the jungle and scrub was cleared, their health would improve dramatically.⁵⁶ The unhealthy nature of this area was also said to deter non-*adivasi* settlers who might have developed the land more productively.⁵⁷ The drawback with this argument was that even in the supposedly 'healthy' tracts of the areas of South Gujarat that adjoined the Arabian Sea and had no forests – which was an area in which high caste landowners carried on commercial agriculture with *adivasis* making up most of the agricultural labour force (working either as bonded labourers or indebted tenants) – the health of the *adivasis* was not noticeably better than

that of their counterparts in the forest zones.⁵⁸ Poverty, rather than terrain, appears to have been the more likely cause of their ill-health. Non-official high-caste commentators, on the other hand, tended to blame the generally poor health of the *adivasis* throughout South Gujarat on their high consumption of alcohol, contrasting this with the more 'healthy' high castes – who were said to generally abstain from taking liquor.⁵⁹

Because their health was generally poor, the South Gujarat *adivasis* suffered particularly badly in epidemics. Reports from the Dangs speak of whole villages becoming deserted after outbreaks of cholera.⁶⁰ There was a particularly deadly cholera epidemic during the time of the great famine of 1899-1900 in which large numbers of *adivasis* died.⁶¹ There was an influenza pandemic in 1891 that affected the whole region, but while in general in India it was relatively mild compared to the later epidemic of 1918-19,⁶² it killed about 2000 out of a total population in the Dangs of 33,000 – that is 6% of the population.⁶³

All of this suggests that the *adivasis* of the region were particularly vulnerable in epidemics, and this was certainly the case in 1918. Indeed, the effects of poor general health and malnourishment were compounded in that year by a severe economic crisis and rain-failure. There was soaring inflation during World War One, making the cost of imported essential commodities extremely high. There was only about one-third the normal rainfall in the region that we are focusing on here during the monsoon of 1918, with widespread crop failure just at the time that the particularly lethal form of influenza swept the area in September-October. Due to illness, many were unable to harvest the little crop that remained.

Despite all this, it was widely observed in 1918-19 that good medical information and care could make a big difference. Biomedical facilities were not however available for a large majority of the *adivasis*. During the nineteenth century, the British colonial and princely state governments provided minimal health care for these people, with small town dispensaries mainly serving local officials and high caste people. This situation began to change in the first decade of the twentieth century as government establishments expanded and missionaries started to provide care for the rural poor. The missionary organisation that worked in the interior of South Gujarat was that of the Church of the Brethren Mission, based in Illinois, USA. Its first missionaries arrived in the area in 1895, established a base at Valsad – which was on the main railway from Bombay to Delhi, and on the border with the *adivasi* tracts – with new mission stations being opened as and when fresh mission workers arrived from America. Only a small number of qualified doctors were however employed by the mission, as at Valsad, where they ran a mission hospital. In most of the mission stations, missionaries without medical qualifications provided basic health care. For example, in the Dangs in the year ending 31 March 1913, the medically-unqualified missionaries treated 1,714 cases in a population of about 29,000. On top of this, medically unqualified teachers in the five mission schools situated in different parts of the Dangs gave out basic remedies to local people.⁶⁴ There was also a government-run dispensary at Ahwa in the Dangs, where, in 1917, 3,803 patients were treated.⁶⁵ In general therefore, only a fairly small minority of the *adivasis* of the area were able to avail themselves of either government or mission medical facilities.

As already pointed out, the chance of survival from an attack of this strain of influenza depended significantly on whether or not the patient obtained plenty of rest, light but

nourishing food – preferably in liquid form – and good nursing.⁶⁶ As medical facilities were so inadequate, few were able to benefit from such care in a hospital. At that time, the training of nurses was in its infancy, and there was no nucleus of trained nurses outside the city of Bombay.⁶⁷ The hospitals and health workers of the Church of the Brethren mission provided this to some extent in the *adivasi* tracts, but in 1918 they were quickly overwhelmed by the disease. Their reports stated that the epidemic started in their area in September 1918, and that by October many people in both towns and rural areas were falling ill and dying. Both Dr. Laura Cottrell and her husband Dr. A. Raymond Cottrell, the mission doctors at Valsad, went down with the disease at the moment that they were most needed, and the hospital had to be closed for a time. Fortunately for them and the mission, both survived. Dr. Barbara Nickey, who ran the clinic at Dahanu, was also kept very busy there treating cases of influenza. After the Cottrells fell ill, Nickey went to Valsad and reopened the hospital there. Others of the American missionaries also fell ill. The missionaries who were not affected did their best to alleviate the suffering.⁶⁸

This was the case in the Dangs, where the medically-unqualified missionaries worked in very difficult circumstances. They reported that the epidemic was at its worst there in October, with a mortality in some villages, they reported, of from 25% to 40%. Of the twelve teachers employed in the mission schools of the Dangs, two died. Adam Ebey reported that although there was a government dispensary at Ahwa, the sick preferred to come to the missionaries for treatment. He said: ‘People have more faith in an un-medical missionary than in a non-missionary medical man.’ Nonetheless, however hard the missionaries tried, there was little they could do to prevent the high mortality. In particular, those who developed pneumonia had little chance of survival. When all the members of a family had

died, the Ebeys had to bury their bodies. Other Christians helped them in this sombre task. They wore masks over their faces, kept damp with eucalyptus oil, to ward off possible infection.⁶⁹

The missionaries thus tried to provide medical aid and well-informed leadership during the pandemic, but they were in general overwhelmed, and were only able to have a minimal impact. Was there any comparable effort from philanthropically-minded Indians at that time? A notable feature of the epidemic that was observed in the major cities Bombay Presidency was the mobilisation of voluntary organisations to provide relief. They raised funds, distributed medicines, set up temporary hospitals, and propagated the vaccine when it was available. According to Ramanna, such ‘...relief was not extended to the villages, because there was neither the infrastructure nor the resources.’⁷⁰ This was not however the case in South Gujarat, where a caste association called the Patidar Yuvak Mandal (Patidar Youth Association) formed a ‘Mitra Mandal’ (Association of Friends) to fight the epidemic. Volunteers, who were largely young Patidars who were studying in Surat City, travelled around the rural areas distributing Ayurvedic medicine free of charge. The Patidar Yuvak Mandal was a very dynamic organisation with strong links with the nationalist movement, and the young men were both idealistic and energetic in their work. They opened over 150 distribution centres in thirteen talukas of the region, including ones under Baroda rule, and medicine was provided for over 10,000 people. There were 41 such centres in Bardoli Taluka, and 66 in Mandvi Taluka – a predominantly *adivasi* area. This provided the first occasion on which these young nationalists made contact with the *adivasis* of the interior – and they gained an experience that they were able to turn to political advantage in later years. Nonetheless, on this occasion they found that the

adivasis were suspicious of them as outsiders from a caste that they had hitherto considered their exploiters. Many *adivasis* rejected their medicines, telling them that it was of no use and that all that they could do was to propitiate their deities. Only a few were persuaded to take the Ayurvedic remedies.⁷¹ Although these young nationalists were during the 1920s able to gradually win the confidence of the *adivasis*, with Gandhian projects being established in their villages, in 1918 there was no time during the brief span of the epidemic to build such contacts and trust. Later, in the 1930s, Gandhian workers were able to provide extremely effective leadership in areas in which they had influence during a recurrence of plague. In 1918, this sort of civil society response was still embryonic in the rural areas, and could not be expected to have a significant impact.

V

In most cases, the *adivasi* were left to their own resources in the face of the pandemic. This can be brought out through the use of oral evidence, as collected in interviews. Such testimonies are, in the case of memories of epidemics, valuable mainly for the way they bring to life the intense emotions stirred at such a time, such as the sensation of dread and social threat, helplessness in the face of the unknown, and the desperate means employed to try to deal with the danger, such as fleeing a village. They cannot be expected to provide a clear description of the symptoms, causes or extent of a disease that would stand up to the scrutiny of medical science. Indeed, the statements are by such standards often confusing, and all we can do is record them without necessarily trying to explain them in unconvincing ways.

Dhuliya Powar, who lived in what was then Surgana State, said that older people were particularly hard hit, though in some households all had died. This contradicts the wider picture of mortality-by-age, though it might have been a peculiarity of this particular locality. Others gave the symptoms, variously, as diarrhoea and vomiting, high fever and delusions, violent shakes and fits, and the throwing back of the head. The latter was seen to be so characteristic that the disease itself was called '*mānmodi*', or 'the breaking of the neck' ailment.

The term '*mānmodi*' does not appear in any of the records on the influenza epidemic of 1918. It is a Marathi word, and all of the references to it in interviews were from either villages that are now situated in the state of Maharashtra, or the Dangs, where the local dialect is heavily influenced by the Marathi language. There is in fact a village called Mānmodi in the Dangs – and there is a local legend that the village was called this after a man had his neck (*mān*) severed after he had angered the god Baramdev. The man's head was replaced after a sacrifice to the deity.⁷² D.D. Kosambi has also mentioned a 'unique and primitive goddess Mānmodi' who is worshipped in a cave in the Mānmodi hills near Junnar, in Pune District of Maharashtra, which is nearly two hundred kilometres from the Dangs. He says that the literal meaning of the word is 'neck-breaker', and in this is reminiscent of the goddess Kavada-dara ('skull-splitter') that is worshipped in an adjoining valley thirteen kilometres away. He says that the goddess Mānmodi 'is not found elsewhere, in any context.' The caves at Junnar were nonetheless located at a place where several ancient trade routes met, and the caves became a location for a Buddhist monastery called Manamakuda. After the decline of Buddhism, they were used for local forms of worship, and he believes that the earlier name evolved in time into Mānmodi. Traces of the

Buddhist origin, he believes, have continued in the custom that no blood sacrifice is ever offered to the goddess, which is most unusual for such a deity.⁷³ The fact that the cave was on a trade route, and that the Dangi village of Mānmodi lies close to the old route from Maharashtra to Gujarat via Saputara (the one that Shivaji is said to have used in his raid on Surat in 1664 – in which he assembled his force first at Junnar⁷⁴) suggests that the term might have travelled.

Why the term is used for what clearly was influenza is not so obvious, as influenza does not, as such, 'break the neck'. The villagers of Vansda State who knew the epidemic by a different name, that of '*dhani pani*', spoke of the head being thrown back, as well as high fever, rigid limbs, and 'delusions' – and the 'neck-breaking' might have referred to the way that people threw their heads back while in a very high fever and suffering the resulting hallucinations. It could be the case that the disease was considered to be a visitation of a goddess who was either called 'Mānmodi', or linked in some way to the word. It was commonly believed that epidemic disease was caused by such visitations; Sitala, the smallpox goddess, was the best known, and cholera was known in those parts as 'Marakhi', after a goddess of cholera called Mari Mata. In the interviews, nonetheless, informants referred to the 'neck-breaking' qualities of the disease, and did not link use of the term '*mānmodi*' to the goddess of that name. There are however some references from outside the Dangs to a belief that the disease was caused by the visitation of a goddess, as we shall see below.

The way in which the popular name for the epidemic differed from area-to-area is also significant. Lucy Taksa, in her oral history of the epidemic in Sydney, recounts how most

people there remembered it as ‘the plague’. For them, the seriousness of the crisis required it to be described in terms of what was popularly believed to be the most fearsome epidemic disease, that of bubonic plague. Even those who accepted that it was in fact influenza still talked of the great ‘plague’ of that year. She also notes how the epidemic was known by many different names throughout the world, whether the ‘Spanish influenza’, ‘the pneumonic flu’, ‘bronchial pneumonia’, ‘Singapore fever’, and even the ‘Bolshevik disease’. In Iran, it was known as ‘the disease of the wind’.⁷⁵ In the Dangs, where there were no local words for ‘influenza’, ‘plague’, and the like, ‘*mānmodi*’ – the neck-breaker – appears to have provided an appropriate metaphor for this fearsome, seemingly supernatural force that spread through the villages with such terrifying speed. As for ‘*dhani pani*’; no explication of the term was provided for Raje when she conducted her interviews, and although the meaning of ‘*pani*’ (‘water’) is quite clear, ‘*dhani*’ has more than one meaning in Gujarati, and so it is not possible to hazard any guesses in this case.

In some of the interviews, old *adivasis* recounted how they and their families had fled their villages to escape the epidemic. Whole villages became deserted at this time. This is borne out by the mission evidence. Adam Ebey of the Church of the Brethren mission, who was based at Ahwa in the Dangs, reported that many people of the tract had fled from their villages to Ahwa during the epidemic, trying desperately to escape the disease, generally to no avail. Indeed, in that forest region where people lived in huts in small settlements, it was very common for them to desert the place whenever an epidemic struck, as it was believed that the place was then haunted by the spirits of the dead.⁷⁶ The downside to this practice was that it ensured that the infection was disseminated quickly through the area. This was almost certainly a contributing element to the exceptional severity of the epidemic

in this hilly region. The *adivasis* of the South Gujarat plains generally lived in villages in more substantial houses on fixed sites, and were less likely to flee their villages at such a time. This would in part explain the lower mortality rates there.

From interviews, it appears that the *adivasis* resorted to remedies that they knew. In the villages of eastern Vansda State, the *bhagats* had sought to treat the disease by catching a particular type of crab from the rivers and streams, roasting it on a fire with some grain, and then making the patient inhale the smoke. No spices or oils were to be eaten. This latter prescription is found also with measles, chickenpox and other diseases believed to be caused by the visitation of a goddess.⁷⁷ More commonly, however, they sort to exorcise and drive away the spirit or deity that was causing the outbreak. In Unbarthan in Surgana, as we have seen, the diviners and exorcists – the *bhagats* – made a figure of a man from a mixture of ground flour and water. They passed the figure over those who were ill, exhorting the spirit to pass from the sick person into the figurine. A few of those so treated were said to have survived, but most did not, and the people lost their confidence in the *bhagats* at that time. Vedu Powar of Chankapur in Kalvan Takuka said that nine or ten had died there in the *mānmodi* epidemic, and the *bhagat* of the village could save only one or two.⁷⁸ The failure of the *bhagats* at that time is brought out also in accounts collected by A.N. Solanki, an anthropologist who carried out a study of the Dhodiya *adivasi* community in the 1970s. He was based at Khergam, a village in the interior of Chikhli Takula. He found that there were still many vivid memories of that time. His informants believed that the epidemic was caused by a goddess. A ceremony was performed to entice the goddess into a pot called a *khapru*, which was then placed on a small cart – a *rath* – and drawn beyond the boundaries of the village. This did not, he was told, stop the disease, and people died in

great numbers, including the *bhagats* whom they had looked to save them.⁷⁹ The failure of the *bhagats* appears to have caused some loss of confidence in them at this time. This was compounded by the Devi movement of 1922-23, when many new-style reformed *bhagats* emerged who denounced the older *bhagats*, whose demands were often extravagant, and instead asked for offerings in coconuts rather than live animals, liquor or sexual favours.⁸⁰

Another feature that comes out from the mission record was that was that the epidemic broke out once more in a virulent form in the interior villages of this region into the early months of 1919. In the Dangs, the Ebeys took over the mission from the Bloughs at the end of January 1919. Soon after they arrived, in early February, influenza struck again. Though they, like the Bloughs, lacked medical training, they dealt with this as best they could. They reported that the new cases were mainly in villages that had not been affected in October and November. In Chankal, for example, where the headman, his family, and six other families had been converted to Christianity, the headman died, along with nineteen other of the Christians.⁸¹ When I visited Chankal in 1981, I was told that the influenza lingered on in the village for five years. In homes in which no one had died in the first year, people often died in the second. No home escaped altogether in those years.⁸²

The Sanitary Commissioner's Report for Bombay described only the second phase of the epidemic that peaked in October, and provided mortality statistics only up to the end of December 1918. It acknowledged that deaths from the disease continued into January 1919, but says that this was mainly the case in Sindh, where the course of the epidemic ran a month later than in the rest of the presidency.⁸³ Examining wider mortality rates for Bombay Presidency, Mills notes that the death rate remained elevated up until March 1919.

By April it was back to normal. He also notes that the epidemic had a profound influence on fertility, as many survivors lost their partners, and if they and when they remarried, women took time to conceive.⁸⁴ The ongoing dearth and, in some areas, famine of 1918-19, would have contributed to this effect.⁸⁵ Studies of the effects of the epidemic in other parts of the world have brought out a common 'post-flu fatigue characterised by mental apathy, depression, subnormal body temperatures and low blood pressure, which could last for weeks or months'.⁸⁶ The lack of proper funerals for the dead was also considered highly inauspicious, causing widespread demoralisation. Recent studies have also suggested that those who survive severe bouts of influenza are prone subsequently to diseases of the central nervous system, and it has been suggested that there was a close a connection between the epidemic of 1918 and the widespread incidence of the sleepy sickness encephalitis lethargic (EL) that killed around five million globally during the 1920s.⁸⁷ The statement by Navsubahi Patel of Chankal village that people in his village continued to suffer for five years afterwards appears to conform to these recent findings.

VI

In the *adivasi* villages, the *bhagats* provided the main leadership in times of epidemiological crisis. Faith in their remedies soon failed as their remedies proved of no avail. An educated middle-class leadership of the sort found quite widely in Alaska was not available for the vast majority of the *adivasis*. There were few schoolteachers, and officials tended to be aloof and uninterested in the so-called 'primitive' classes whose destiny – so they saw it – was to either acculturate to high caste values or perish. Although some idealistic young nationalists tried to provide Ayurvedic remedies for the *adivasis* of South Gujarat, they had

no previous connection with the villages, and they were unable to have much impact at the time. Other nationalist adopted a moralistic stance, holding that the *adivasis* suffered disproportionately because of their moral deficiencies and in particular their alleged drunkenness. In the words of the Congress leader of Surat, Haribhai Desai: 'Those addicted to drink paid a frightful toll to the epidemic of influenza in 1918. Whole villages were devastated in forest areas and those parts of the district inhabited by Kaliparaj.'⁸⁸ In this region, Christian missionaries provided almost the only well-informed and sympathetic leadership, as well as biomedical health care, but taken as a whole, they were few and far between, so that their overall impact was fairly minimal.

This all left the *adivasis* of this region particularly vulnerable to epidemic disease. Their poverty, poor sanitation, diet and water supply, and the chronic malaria that sapped their energy and undermined their immune system, along with – at that time – an undiagnosed sickle-cell anaemia, all made them particularly susceptible when influenza swept their villages in 1918. To compound this, the colonial state failed to provide for these people any welfare, and in particular any meaningful health care or guidance and leadership, and aid and help from civil society organisations was poorly-developed and only able to have a small impact. The *adivasis* were left largely alone to suffer, and so traumatic was their experience that to this day they still, in those hill and forest villages, remember that terrible time of *mānmodi*.

¹ Its point of origin is disputed, though many American scholars have claimed that it began in the mid-West of the USA. G. Beiner, 'Out in the Cold and Back: New-Found Interest in the Great Flu', *Cultural and Social History*, 2006, 3, 500.

² H. Philips and D. Killingray, 'Introduction', in *The Spanish Influenza Pandemic of 1918-19: New Perspectives*, eds H. Philips and D. Killingray (London: Routledge, 2003), 2-6.

³ A.W. Crosby, *America's Forgotten Pandemic: The Influenza of 1918* (Cambridge: Cambridge University Press, 1989), 228-29.

⁴ Philips and Killingray, 'Introduction', 1- 4, 11-21; Beiner, 'Out in the Cold and Back', 496-8.

⁵ M. Honigsbaum, 'Robert Webster: "We ignore bird flu at our peril"', *The Guardian*, 17 September 2011.

⁶ R. Collier, *The Plague of the Spanish Lady: The Influenza Pandemic of 1918–1919* (London: Macmillan, 1974).

⁷ Crosby, *America's Forgotten Pandemic*, xi.

⁸ For a brief review of this literature, see A. Noymer, 'Review of John M. Barry, *The Great Influenza: The Epic Story of the Deadliest Plague in History*', *Population and Development Review*, 2004, 30, 537.

⁹ D. Arnold, *Colonising the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California, 1993); M. Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine 1859-1914* (Cambridge: Cambridge University Press, 1994). Arnold refers to the 1918 epidemic briefly in passing on 75, 93, 164, 200, 306 n.86, Harrison not at all.

¹⁰ *Annual Report of the Sanitary Commissioner for the Govt. of Bombay 1918* (Bombay: Government Central Press, 1919). It should be noted that while detailed mortality rates are

provided in this report, there are no statistics showing morbidity. Because of this, it is not possible to determine, using these figures at least, whether there was a direct relationship in a particular area between high morbidity and mortality, or whether similar morbidity rates led to differing mortality rates due to factors such as prevailing health conditions or varying levels of medical care area-by-area.

¹¹ I.D. Mills, 'The 1918-1919 Influenza Pandemic – the Indian Experience', *Indian Economic and Social History Review*, 1986, 23, 27.

¹² These figures are from the *Sanitary Commissioner Report 1918*, 3. If we accept Mills' argument, the percentage mortality figures given in the report should be roughly doubled to give a more accurate estimate.

¹³ *Sanitary Commissioner Report 1918*, 24.

¹⁴ *Sanitary Commissioner Report 1918*, 4, 44-45.

¹⁵ Mills, 'The 1918-1919 Influenza Pandemic', 33.

¹⁶ M. Ramanna, 'Coping with the Influenza Pandemic: The Bombay Experience', in *The Spanish Influenza Pandemic of 1918-19*, eds Philips and Killingray, 92.

¹⁷ A. Maharatna, 'How can "Beautiful" be "Backward"? Tribes of India in a Long-term Demographic Profile', *Economic and Political Weekly*, 2011, 46: 4, 44.

¹⁸ Ramanna, 'Coping with the Influenza Pandemic', 94-6. The quote is from 96.

¹⁹ D. Hardiman, *The Coming of the Devi: Adivasi Assertion in Western India* (New Delhi: Oxford University Press, 1987).

²⁰ Interview with Navsubhai Kolgabhai Patel, Chankal, Dangs District, 4 June 1981.

²¹ Interview with Govinda Mahadu Karbhari, Saputara, Dangs District, 8 June 1981.

²² Interviews by Gauri Raje in Vandsa Taluka of Surat District, 2005.

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- ²³ J. McGregor and T. Ranger, 'Displacement and Disease; Epidemics and Ideas about Malaria in Matabeleland, Zimbabwe, 1945-1996', *Past and Present*, 2000, 167, 221-2.
- ²⁴ L. Taksa, 'The Masked Disease: Oral History, Memory and the Influenza Pandemic 1918-19', in *Memory and History in Twentieth Century Australia*, eds K. Darian-Smith and P. Hamilton (Melbourne: Angus and Robertson, 1994), 77-9.
- ²⁵ *Social and Economic Atlas of India* (New Delhi, Oxford University Press, 1987), 27.
- ²⁶ Philips and Killingray, 'Introduction', 5; J.K. Taubenberger, 'Genetic Characteristics of the 1918 "Spanish" Influenza Virus', in *The Spanish Influenza Pandemic of 1918-19*, eds Philips and Killingray, 43.
- ²⁷ Philips and Killingray, 'Introduction', 5-6.
- ²⁸ E.D. Kilbourne, 'A virologist's perspective on the 1918-19 pandemic', in *The Spanish Influenza Pandemic of 1918-19*, eds Philips and Killingray, 29-30.
- ²⁹ Taubenberger, 'Genetic Characteristics of the 1918 "Spanish" Influenza Virus', 42-43; Beiner, 'Out in the Cold and Back', 499.
- ³⁰ Philips and Killingray, 'Introduction', 8.
- ³¹ *Sanitary Commissioner Report 1918*, 21, 25. It should be noted that the pneumococcus bacteria that causes pneumonia is an alpha-hemolytic sub-category of the bacterial species streptococcus, and in itself, the statement that streptococcus was involved does not tell us much, as there are several benign forms of the species. R. A. Harvey and P.C. Champe, *Microbiology* (Baltimore and Philadelphia: Lippincott Williams and Wilkins, 2007), 78-84.
- ³² Ramanna, 'Coping with the Influenza Pandemic', 91.
- ³³ *Ibid.*, 89, 95, 97.

³⁴ *Sanitary Commissioner Report 1918*, 26-7; A.G. Tresidder, Memorandum by the Personal Assistant to the Surgeon-General with the Government of Bombay, Poona, 5 October 1918, Maharashtra State Archives, Bombay, General Department 1918, comp. 353, 107; Philips and Killingray, 'Introduction', 8.

³⁵ *Sanitary Commissioner Report 1918*, 20, 22, 24, 44-45.

³⁶ H.G. Waters, 'A Note on Influenza in India, 1918-20', *The British Medical Journal*, 16 October 1920, 592.

³⁷ Philips and Killingray, 'Introduction', 8.

³⁸ *Ibid.*, 8, 10.

³⁹ Taubenberger, 'Genetic Characteristics of the 1918 "Spanish" Influenza Virus', 42.

⁴⁰ Crosby, 'America's Forgotten Pandemic', 25, 228, 241-6.

⁴¹ *Ibid.*, 247-8.

⁴² If we accept Mills' argument, we may double this and the other mortality figures that follow in this section to give more likely realistic mortality rates.

⁴³ It is beyond the scope of this article to try to explain the reasons for the large differences in mortality rates within Bombay Presidency as a whole. The worst-affected areas were all in the interior plateau regions of Maharashtra – the Deccan and Khandesh – while the coastal regions of the Konkan and the Gujarat plains had considerably lower mortality rates. There may have been a mutation that appeared first in the area around Pune in September 1918 and caused particularly high mortality in the adjoining areas of the Deccan and Khandesh in October, thereafter subsiding in virulence. This is merely a conjecture that requires further investigation, as no convincing explanation has been provided either in the official reports or by subsequent historians, such as Mills. My general argument in this

paper is, nonetheless, that varying degrees of virulence could be compounded – sometimes dramatically – by the underlying health profile of different social groups and their access to medical knowledge and care.

⁴⁴ *Sanitary Commissioner Report 1918*, 28.

⁴⁵ G.D. Patel, *Gujarat State Gazetteers Dangs District* (Ahmedabad: Government of Gujarat, 1971), 159; *Administration Report of the Dharampur State for 1920-21* (Surat: Mission Press, 1919), 1.

⁴⁶ Using census data to suggest mortality rates is open to the problem that it might show out-migration from the region – caused perhaps by an agricultural crisis such as rain failure – rather than mortality from influenza as such. The census reports do not put forward any such suggestion. Discussing the period 1911-21, the Baroda Census Commissioner, S.V. Mukerjea, argued that although the rains had failed in 1918, there was little distress or human starvation due to the implementation of more effective famine relief measures than in earlier years. The influenza epidemic was by far the more important cause of high mortality in that year. *Census of India, 1931*, Vol. XIX, *Baroda*, Part I – *Report* (Bombay: Times Press, 1932), 23.

⁴⁷ Jawahar figures from *Jawahar State Administration Report for the Year 1918-19*, India Office Records, British Library, V/10/1299, 1, 17.

⁴⁸ D. Hardiman, 'Power in the Forest: the Dangs, 1820-1940', in *Subaltern Studies VIII*, eds D. Arnold and D. Hardiman (New Delhi: Oxford University Press, 1994); A. Skaria, *Hybrid Histories: Forests, Frontiers and Wildness in Western India* (New Delhi: Oxford University Press, 1999).

⁴⁹ On usurers see D. Hardiman, *Feeding the Baniya: Peasants and Usurers in Western India*, New Delhi: Oxford University Press, 1996); on liquor dealers see D. Hardiman, 'From Custom to Crime: The Politics of Drinking in Colonial South Gujarat', in *Subaltern Studies IV*, ed R. Guha (New Delhi: Oxford University Press, 1985).

⁵⁰ E. Maconochie, 'Revision Settlement, 1897', in *Papers Relating to the Revision Survey Settlement of the Chikhli Taluka of the Surat Collectorate: Selections from the Records of the Bombay Government*, No. 381 ns (Bombay: Government Central Press, 1899), 3.

⁵¹ D.C. Graham to D.A. Blane, 29 March 1839, Maharashtra State Archives, Bombay, Political and Secret Department, Vol. 15, comp. 1011. While Graham's explanation for malaria is now discredited, there is no reason to doubt his observation that it was widespread in the area.

⁵² R.A. and L. Cottrell, 'Bulsar Medical Report,' *The Missionary Visitor*, 28: 6, 1926, 171-72.

⁵³ P. Prakash, P. 2005, 'Where is the Woman in Preventive and Social Medicine?', *Economic and Political Weekly*, 40: 18, 2005, 1830-31.

⁵⁴ B.H. Mehta, 'Social and Economic Conditions of the Chodhras, An Aboriginal Tribe of Gujarat', MA thesis: University of Bombay, 1933, 375.

⁵⁵ P.O. Bodding, *Studies in Santal Medicine and Connected Folklore* (Calcutta: the Asiatic Society, 1986 reprint – 1st pub. in 3 parts 1925-40), 142-43.

⁵⁶ C.N. Seddon, 'Settlement Report, 1906', *Jamabandi Settlement Report of the Vyara Taluka of the Navsari Division, 1906-07* (Baroda: Government Press, 1907), 6, 15.

⁵⁷ See G.H. Desai, *Census of India, 1911*, vol. XVI, *Baroda*, Part 1, *Report* (Bombay: The Times Press, 1911), 4; K. Jhadav, 'Opinion on the Revision Settlement Report of Mahuva Taluka', Baroda: Government Press, 1914), 1.

⁵⁸ For the condition of the bonded *adivasi* labourers – the Dublas or Halpatis – see J. Breman, *Patronage and Exploitation: Changing Agrarian Relations in South Gujarat* (Berkeley: University of California, 1974). It may be noted that modern irrigation projects have in the past four decades allowed intensive cultivation of sugarcane in large swathes of the plains regions of South Gujarat. The cane is cut largely by *adivasi* migrant labourers, who live in temporary camps next to irrigation canals. They suffer very badly from malaria. The prediction that agricultural development would protect all of the people from malaria has not therefore been fulfilled.

⁵⁹ For example, see G.C. Mukhtyar, *Life and Labour in a South Gujarat Village* (London, New York, and Toronto: Longmans, Green and Co., 1930), 245.

⁶⁰ J. Campbell, enquiry of 5 July 1871, Baroda Records Office, Rajdaftar Office, serial no. 710, daftar V/426, file 113, Residency file nos. 167A and 316, 126-38.

⁶¹ D.F. Ommaney to G. Carmichael, 5/21 October 1900, in *Annual Report on the Western Bhil Agency, Khandesh 1899-1900*, British Library I.S. BO 1/2.

⁶² Ramanna, 'Coping with the Influenza Epidemic' 91.

⁶³ *Administration Report of the Forest Department in the Bombay Presidency, including Sind, for the Year 1891-92* (Bombay: Bombay Government Press, 1893) 71.

⁶⁴ J.M. Pittenger, *Annual Report* (Elgin, Ill.: Brethren Publishing House, 1913), 53.

⁶⁵ *Gazetteer of the Bombay Presidency, Vol. II-B, Surat and Broach* (Bombay: Government Central Press, 1926), 52-53.

⁶⁶ *Sanitary Commissioner Report 1918*, 25; Tresidder, 'Memorandum', 107.

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- ⁶⁷ Sanitary Commissioner for Government of Bombay to Secretary to Government, 2 November 1918, Maharashtra State Archives, Bombay, General Department, 1918, comp. 214, 120.
- ⁶⁸ W.B. Stover, *One Year's Visiting with our Missionaries in India: A Story* (Elgin, Ill.: Brethren Publishing House, 1919), 64-65, 72-74.
- ⁶⁹ *Thirty-fifth Annual Report of the Church of the Brethren Mission for Year ending 29 February 1920* (Elgin, Ill.: Brethren Publishing House, 1920), 16-18.
- ⁷⁰ Ramanna, 'Coping with the Influenza Pandemic', 87.
- ⁷¹ A. Bhatt, 'Caste and Political Mobilisation in a Gujarat District', in *Caste in Indian Politics*, ed R. Kothari, New Delhi: Orient Longman, 1970), 320-21.
- ⁷² D.P. Khanapurkar, 'The Aborigines of South Gujarat,' unpublished Ph. D. thesis: the University of Bombay, 1944, 91.
- ⁷³ D.D. Kosambi, *Myth and Reality: Studies in the Formation of Indian Culture* (Bombay: Popular Prakashan, 1962), 98-100.
- ⁷⁴ Patel, *Dangs Gazetteer*, 82.
- ⁷⁵ Taksa, 'The Masked Disease', 77-9, 86-7.
- ⁷⁶ A.T. Shuttleworth to Bombay Government, 6 April 1871, Maharashtra State Archives, Bombay, Revenue Department, Vol. 18, comp. 552.
- ⁷⁷ Interviews by Gauri Raje in Vansda Taluka, 2005.
- ⁷⁸ Interview with Vedu Khanu Pawar, Chankapur, Kalvan Taluka, Nasik District, 12 January 1982.
- ⁷⁹ A.N. Solanki, *The Dhodias: A Tribe of South Gujarat Area* (Vienna: Acta Ethnologica et Linguistica, 1976), 204.

⁸⁰ On this, see Hardiman, *The Coming of the Devi*, 189-90.

⁸¹ *Thirty-fifth Annual Report of the Church of the Brethren Mission for Year ending 29 February 1920* (Elgin, Ill.: Brethren Publishing House, 1920), 16-18.

⁸² Interview with Navsubhai Kolgabhai Patel, Chankal, Dangs, 4 June 1981.

⁸³ *Sanitary Commissioner Report 1918*, p. 23.

⁸⁴ Mills, 'The 1918-19 Influenza Pandemic', 32.

⁸⁵ I. Klein, 'Death in India, 1871-1921', *Journal of Asian Studies*, 1973, 32, 34-35.

⁸⁶ J.G. Ellison, ' "A Fierce Hunger": Tracing Impacts of the 1918-19 Influenza Epidemic in Southwest Tanzania', 225.

⁸⁷ J.S. Oxford, 'A Virologist's Forward', in *The Spanish Influenza Pandemic of 1918-19*, eds. Philips and Killingray, xvii-xix; Philips and Killingray, 'Introduction', 11.

⁸⁸ *Report of the Excise Committee Appointed by the Government of Bombay, 1922-23*, Vol. 2 (Bombay: Bombay Government Press, 1923), 529.