

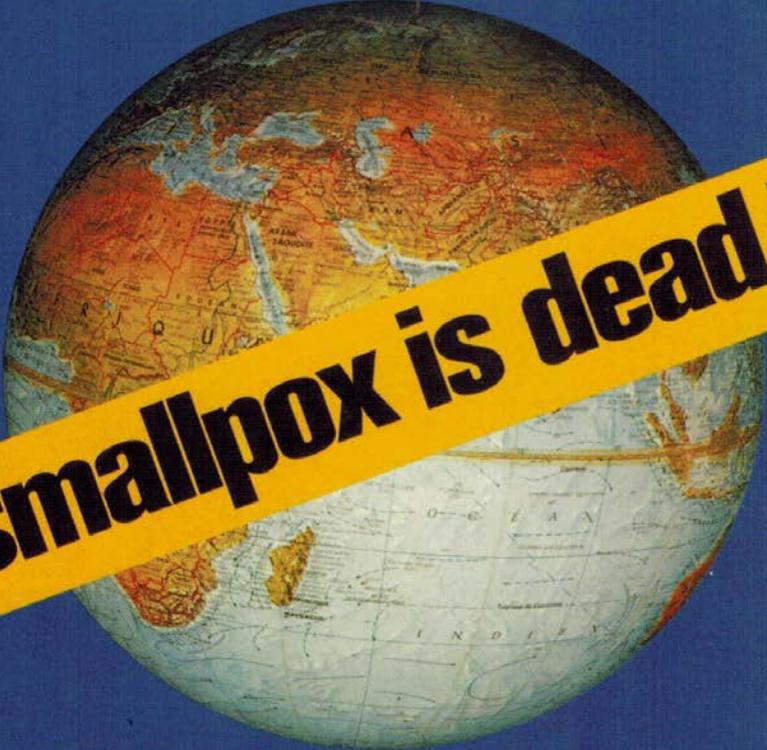
# Smallpox Eradication

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# WORLD HEALTH

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A globe of the Earth is centered in the image, showing continents and oceans. A bright yellow banner is draped diagonally across the globe from the bottom left to the top right. The banner contains the text "smallpox is dead!" in a bold, black, sans-serif font. The globe is set against a dark blue background.

**smallpox is dead!**

# Smallpox Eradication

- Smallpox was declared eradicated from the world on October 12, 1979
- Less than 13 years after the WHO programme was initiated.
- A wonderful success for humanity as whole.

- How did this come about, given the culturally very different attitudes and theories about the disease?
- How should we understand this event philosophically, sociologically, politically?
- Central questions:
  - Choice – how free?
  - Education – How effective, enough time?

- My initial interest stems from east - west and modern science - traditional knowledge issues, but interesting from a policy point of view.
- Understanding this is still in flux and far from complete.

# The WHO achievement involves:

- modern (western, northern) science
- traditional (local, indigenous) knowledge
- class war
- imperialism
- cold war
- technological advances
- coercion
- genuine world cooperation

Understanding may be important for future projects: AIDS, polio, etc. and perhaps current vaccine issues in Ontario.

# Framework (a priori)

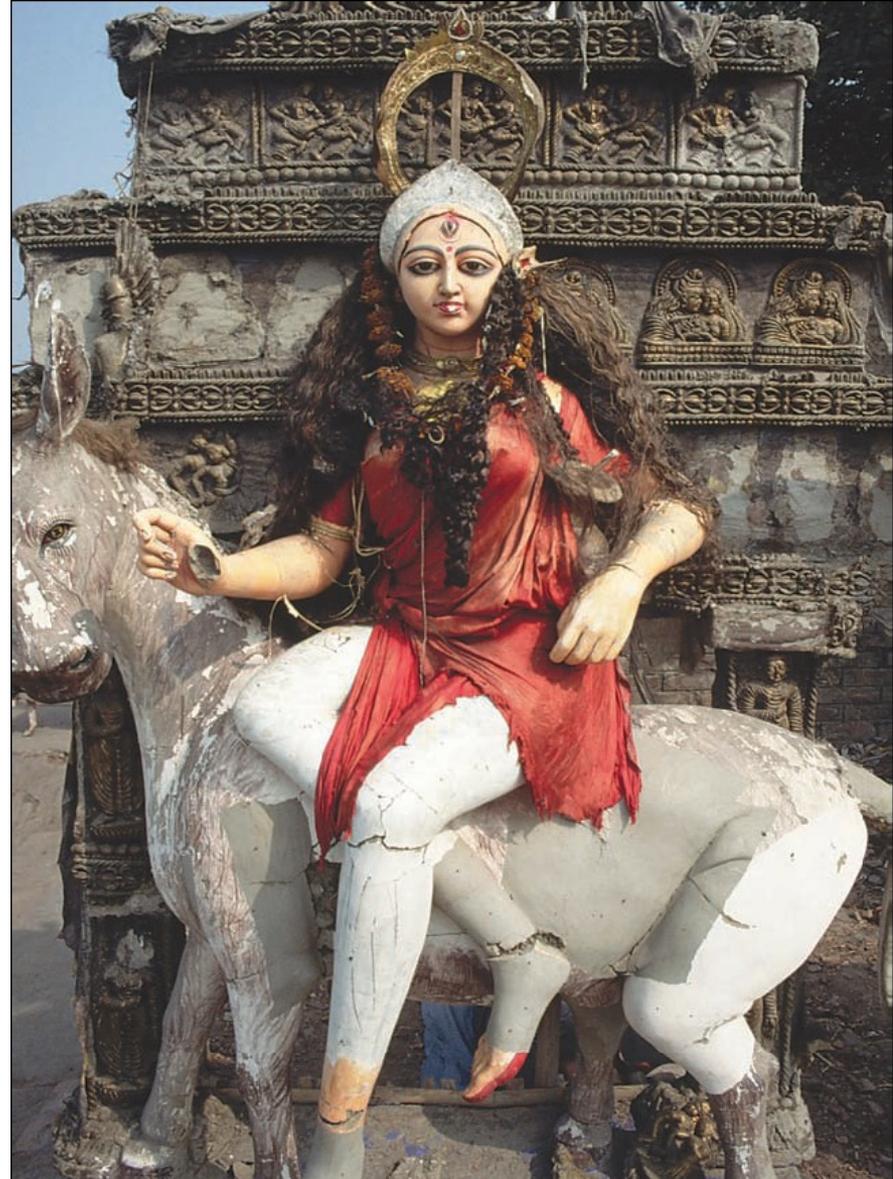
- Eradication of smallpox was a great achievement
- Human wellbeing mattered utmost
- Respect for all adult humans required (democracy)
- Best policy determined by best theory
- Rejection of relativism – cognitive & moral
- These will not all survive

# The Disease

- Smallpox is a virus (variola major, varioula minor)
- Killed several million each year (more than war); often left survivors disfigured, blind.
- Variolation (inoculation): pox matter introduced into body of a healthy person who then acquires immunity.
- Jenner (late 18th C): vaccination uses a similar virus (cowpox) to achieve immunity. (cow = vacca).
- Death rates:
  - 30-50% from the disease (if contracted)
  - 2% from variolation
  - 0.0002% from vaccine
- My focus is on India where half the deaths occurred.

# Sitala Mata

- Hindu goddess of smallpox
  - Smallpox seen as a blessing (ie, a divine intervention)
- Basket of seeds on her head, which can fall on people
  - Survive, if seeds washed with water carried in her arms
  - Die, if she uses broom
  - Many variations on this
- Appeals for help are made to Sitala
  - Ritual prayers during variolation
  - Inflicted person viewed as the goddess incarnate
  - Sitala is both the cause and the cure
  - Note the parallel to variolation



# “Modernization”

- Sitala Mata worship and variolation were both in common practice in India since 16<sup>th</sup> c.
- The practice of variolation spread throughout Europe. (In UK called “grafting.”)
- Britain outlawed variolation in 1865 in India (as they did in the UK) and made vaccination compulsory.
- Resistance in India was extensive and often violent (as it was in UK).

- Defending variolation seen as anti-colonial, hence good. (In UK, the poor used variolation; forced vaccination was seen as anti-poor.)
- Educated and politically powerful Indians (eg, Nehru) – before and after independence – favoured vaccination.
- After independence modernization could be linked to USSR, not to the old colonial European masters.
- Variolation was outlawed by new Indian government again and vaccination made compulsory, but still resistance remained.

# Traditional Knowledge

One way of thinking about Sitila-variolation is in terms of traditional knowledge (= local knowledge or indigenous knowledge)

It is often defined as: knowledge (or beliefs) based on the social, physical, and spiritual understandings which have informed a people's survival and contributed to their sense of being in the world.

Contrast: “Modern, Western, Northern science”

# Quick Questions

- Is the Sitala-variolation theory pseudo-science?
  - Not obviously, since variolation is empirically very successful, more so than the older Madhava humor theory.
- Were there associated technological advances?
  - Yes, variolation was a clear success.
  - And improvements were being made (dried scabs used).
  - Jenner followed variolation methods to administer cowpox.
- Are all theories on a par (relativism)?
  - No, the germ theory of disease is certainly superior to the Sitala Mata theory.

# Why Reasonable?

- Variolation fits in with general cultural beliefs, ie Hinduism.
- It is very successful. Variolation deaths are only 1 in 50, whereas smallpox deaths (if contracted) are 1/3 to 1/2.
- The difference between variolation's 1 in 50 deaths vs vaccination's 1 in 5000 deaths is not that evident when dealing with small samples (a typical village), especially when people are dying of many other things, anyway.

# Conditions in 1967

- But are we right to uphold the following principle?  
*Science Policy should be determined by the best scientific theory. (Ignore social factors, since they vary from one society to another. The solution must be universal.)*
- Good news
  - Smallpox is a human disease – no animal reservoir, unlike malaria
  - Effective vaccine existed
  - No cultural impediments, unlike venereal disease, leprosy, etc.
- Thus, it looked promising, unlike the earlier failed malaria and yellow fever programmes.

# Eradication Plan

- Jenner proposed eradication in 1801
- Nothing serious suggested until 1950s
- USSR proposed eradication at 11<sup>th</sup> World Health Assembly, 1958 (and donated most vaccines in the early years)
- Other countries joined in
- Eradication programme initiated by WHO, January 1, 1967

# Implementation

- Initial plan (1967):
  - mass vaccination
  - herd immunity
  - this largely failed
- New strategy adopted by 1970
  - surveillance and control

# Tactics

- A change of tactic was crucial: from complete vaccination of everyone to the strategy of surveillance and control.
- The use of force – at a time of no outbreak – was a disastrous policy.
- But during epidemics, the general population was much more receptive to vaccination. “Never let a crisis go to waste.”
- This was highly successful.
- It was a victory of reason + political force over a reasonable population. The better theory won, but not by rational persuasion.

# New Icon

A change of iconography, from Sitala (both cause and cure) to a demon (wholly evil); the cure is in the bifurcated needle.



# Class War

- Another way of thinking about things is in terms of class conflict.
- British government made variolation illegal in the UK and India in the mid-19 c.
  - Serious, sometimes violent resistance by British working class & rural peasantry, which saw it as an attack on them.
  - Eventually they were won over to vaccination.
  - Serious, sometimes violent resistance of the subject Indians, who saw it as an attack on them by British Imperialists.
- Indian government (after independence in 1948) made variolation illegal and joined the smallpox eradication programme (1967), making vaccination compulsory.
  - Still, there was serious, sometimes violent resistance by Indian peasants, who saw it as an attack on the poor.



*The Cow-Pock — or — the Wonderful Effects of the New Inoculation! — vide. the Publications of the Anti-Vaccine Society.*

*Pub. June 10. 1854. by H. Thompson & James Street.*

# Class Allies

- In many societies there is an educated or scientific elite, a ruling class, and the general population (and others, eg, a religious elite).
- They can be in harmony or hostile to one another.
  - In the West, there is complete harmony in physics
  - Mixed in biology, many in the public reject Darwin
  - In India, the scientific and political classes favoured vaccination (with good reason).
  - The general population favoured the Sitala theory (also with good reason).

# Outlook

- Liberal outlook:
  - Free choice, as far as possible
  - No Force, as far as possible
  - Education, so people make better choices
- Smallpox was a challenge to this.
  - No time to educate the world (2,000,000 a year die)
  - Success requires universal compliance
  - Upshot: force sometimes required

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