

History

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When Politics Freed Science from Task Force Impositions

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The survival of many London entrepreneurs is endangered by a new British government law. It's the Nuisances Removal and Diseases Prevention Act, a bill proposed by the technical task force established by the Queen and the Government with the aim of curbing the spread of the epidemic.

The task force believes that it is necessary to improve the quality of London's air and therefore proposes to impose the adaptation of their production and smoke emission systems on many factories. Which obviously involves huge investments.

The alternative would be the total closure of the factories. We are in London, in 1854. In the midst of the cholera epidemic that would have killed 23,000 people across Great Britain.

In those years the dominant theory in explaining the causes of cholera was that of miasms, which we could also call “fetid airs”. The basic idea was that polluted air was the vehicle of the epidemic. Stables, slaughterhouses, and many factories that processed organic materials of both animal and vegetable origin, were the main sources of these pollutions. In fact, gas and boiling production plants dispersed fumes from the nauseating odors into the air, fumes that were believed to be the carriers of cholera.

Dr. John Snow, however, was not convinced by this explanation.

John Snow's research on cholera

Snow, in those years was an anesthesiologist already well established, he was the one who administered chloroform inhalations as an anesthetic to Queen Victoria on two of her parts.

Precisely because he was an expert on gas inhalation, he was immediately unconvinced by the theory of miasms. According to him, the transmission of the disease occurred through the waters.

In 1849 he began to make his first epidemiological investigations by making appropriate maps on the spread of cholera among Londoners and published a short treatise entitled *On The Mode of Communication of Cholera*. In 1854, when the epidemic recurred, John Snow, in general skepticism, proposed the removing the Broad Street water pump in the Soho neighborhood. The origin of cholera was there for him. A few days after the pump was removed, the epidemic outbreak in that neighborhood actually subsided.

It was because of these ideas against the tide that the London entrepreneurs, whose business was threatened by the new bill, asked Snow to testify before the British Government's Health Commission. The aim was to convince politics to block that law that could have been the end of any activity for them.

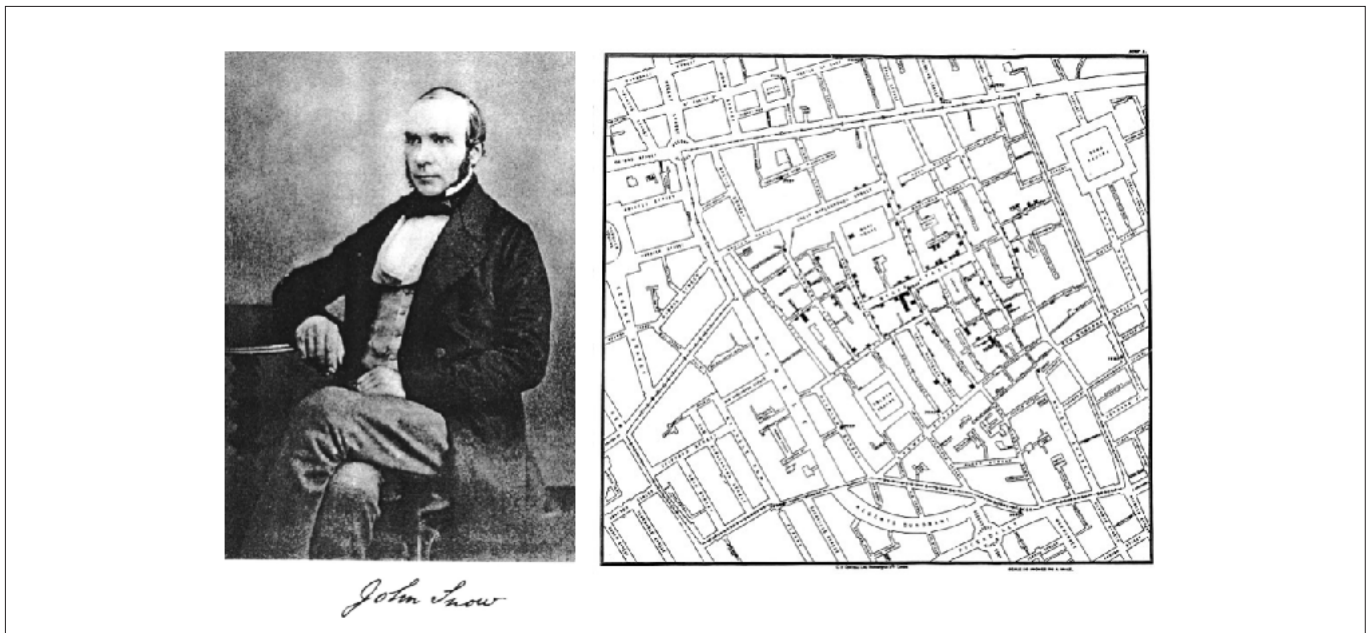


Figure 1: John Snow and one of his epidemiological maps

The interrogation of the Health Commission of the British Government

The hearing was set for March 5, 1855, the President of the Commission was Mr Sir Benjamin Hall, the very Ben from whom the Big Ben of the London clock was named.

Sitting in front of the commission, dr. Snow is immediately clear and honest in explaining the reason why he offered to testify:

“I received a request from Mr. Knight. I was asked if I would give evidence on behalf of the manufacturers whose interests are threatened by the Nuisances Removal Act.”

“To what points would you desire to draw the attention of the Committee as regards the sanitary question?” Snow is then asked.

“I have paid a great deal of attention to epidemic diseases, more particularly to cholera – says Snow – (...) and I have arrived at the conclusion with regard to what are called offensive trades, that many of them really do not assist in the propagation of epidemic diseases, and that in fact they are not injurious to the public health. I consider that if they

were injurious to the public health they would be extremely so to the workmen engaged in those trades, and as far as I have been able to learn, that is not the case; and from the law of the diffusion of gases, it follows, that if they are not injurious to those actually upon the spot, where the trades are carried on, it is impossible they should be to persons further removed from the spot.”

The hearing continued with many more questions and the commission proved cold towards those explanations. The president, Sir. Benjamin Hall, was a strong supporter of the theory of miasms and he held in great consideration the opinion of dr. William Farr, director of the British Statistics Society and the British Government Statistics Department. We could say that Farr was one of those experts with the right profile to lead a task force. Obviously Farr was also a strong supporter of the theory of miasms and pushed for the commission to distance itself from the theories of Dr. Snow.

The scientific community against Snow’s theories

Even *The Lancet* published a tough editorial against John Snow on June 23, 1855. An editorial that spared no criticism even from the direct political commission

Sir Benjamin Hall, who had wasted time listening to these absurd theories.

With these words *The Lancet* reconstructs the hearing of Dr. John Snow of March 5, 1855:

“They (businessmen) bring before the Committee a doctor and a barrister. They have formed an Association. They have a Secretary, a bone merchant, who has read the writings of Dr. Snow. Now, the theory of Dr. Snow tallies wonderfully with the views of the ‘Offensive Trades’ Association” – we beg pardon if that is not the right appellation – and so the Secretary puts himself in communication with Dr. Snow. And they could not possibly get a witness more to their purpose. Dr. Snow tells the Committee that the effluvia from bone-boiling are not in any way prejudicial to the health of the inhabitants of the district; that “ordinary decomposing matter will not produce disease in the human subject.”

The editorial was not signed but was probably written by James Wakley, son of the founder of the newspaper, Thomas Wakley, and succeeded him as editor:

“Why is it then, that Dr. Snow is singular in his opinion? Has he any fact to show in proof? No! But he has a theory, to the effect that animal matters are only injurious when swallowed! The lungs are proof against animal poisons; but the alimentary canal affords a ready inlet. (...) Dr. Snow claims to have discovered that the law of propagation of cholera is the drinking of sewage water. His theory, of course, displaces all other theories. (...) In riding his hobby very hard, he has fallen down through a gully-hole and has never since been able to get out again. And to Dr. Snow an impossible one: so there we leave him.”

The final decision of the Health Commission of the British Government

Despite all these pressures, on 14 August 1855 the British government officially took the decision not to

impose any restrictions on factories that produced fumes, thus giving credit to John Snow’s theories.

Maybe because he was not an expert on the subject, Benjamin Hall remained more open than the established scientists of the time to consider theories other than conventional ones. In doing so he has guarded, perhaps unconsciously, that margin of doubt and that openness to the inconceivable indispensable for science to progress.

In the following years, in fact, science produced new evidence to confirm Snow’s hypotheses, William Farr when himself changed his mind in 1866 by converting to the theory of the transmission of cholera by water. In 1884 when Robert Koch isolated and studied the cholera bacterium, *Vibrio cholerae* in detail, it was finally understood that transmission could not take place by air.

Today John Snow is universally recognized as one of the fathers of modern epidemiology.

The late apology of The Lancet

More than 150 years after these events, on April 13, 2013, *The Lancet* published an article to apologize to John Snow using these words:

The Lancet wishes to correct, after an unduly prolonged period of reflection, an impression that it may have given in its obituary of Dr. John Snow on June 26, 1858. The obituary briefly stated:

“Dr. John Snow: This well-known physician died at noon, on the 16th instant, at his house in Sackville Street, from an attack of apoplexy. His researches on chloroform and other anaesthetics were appreciated by the profession.”

The journal accepts that some readers may wrongly have inferred that *The Lancet* failed to recognise Dr. Snow’s remarkable achievements in the field of epidemiology and, in particular, his visionary work in deducing the mode of transmission of epidemic cholera. The Editor would also like to add that comments such as “In riding his hobby very hard, he has fallen down through a gully-hole and has never since been able to get out again” and “Has he any facts to show in proof? No!”, pu-

blished in an Editorial on Dr.Snow's theories in 1855, were perhaps somewhat overly negative in tone.

History, science and the human soul

History always proves to be an excellent teacher to better understand the present and avoid repeating certain mistakes. Thinking today of being immune to these dynamics would however be too naive, it is something inherent in the human soul. The same story however shows us how Science has always managed to evolve freeing itself from all those human conditionings that wanted to control it.

But what is a year for humans can be decades for science.

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