

Risk and the Masses

A historical reflection on the vaccination failure of 2009

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The failure of the vaccination campaign against the H1N1 virus has sometimes been blamed on the ‘wild rumours’ circulating on the Internet. According to Jean-Baptiste Fressoz, this interpretation misses the point. He offers a stimulating historical parallel between the inoculation against smallpox in the 18th century and the H1N1 outbreak of 2009. His analysis highlights the limitations of risk as a method of persuasion and body management.

The current debate over the vaccination campaign against the H1N1 influenza virus is centred on the government’s handling of the epidemic. Questions have been asked about the decision to carry out mass vaccination and the role of pharmaceutical companies in making such a decision; criticism has focused particularly on the government’s lack of communication and patent inability to convince people of the need to be vaccinated. This article will put forward a different argument: the vaccination failure of 2009 is, at a deeper level, due to the use of risk as a technology of persuasion, and communication as a political form.

On the first day of the vaccination campaign, newspapers reported a case of Guillain-Barré syndrome, a rare disease of the peripheral nervous system. An official spokesperson for the French Department of Health explained that it was a potentially serious disease: 10% of patients are left with reduced mobility and 5% die. Fortunately for the vaccine, the rate was between four and seven cases for every 100,000 flu carriers, whereas the risk associated with the vaccine was just one case for every million people vaccinated. However, according to a somewhat contradictory statistic, 45 million Americans were vaccinated against the flu in

1976 in the United States. Almost 500 of them developed Guillain-Barré syndrome and 25 died¹.

Risk, and applying the calculus of probabilities to the business of life, death and health, are techniques often used to guide individuals in body management. Faced with the choice of whether or not to be vaccinated, we must return to simple fractions and subsume our lives and bodies into vast groups. We are told to behave as rational individuals seeking to maximise our life expectancy.

In order to understand the failure of that method of persuasion, I suggest we make a historical detour via the 18th century and the inoculation campaign against smallpox, which took place at a time when risk was invented as a tool for life management. I shall then return to the issue of subjecting contemporary biopolitics to conflicting demands: guaranteeing the population's health and respecting the individual's free will; detecting low health risks and convincing the public that such risks exist; keeping people informed and dealing with the mass of other informants. Finally, I shall finish with an evaluation of the contemporary illusion of a democratic public space created by the Internet.

Risk and the utopia of the public sphere²

In the 18th century, smallpox was a widespread disease. Depending on the virulence of the epidemic, it killed between one in twenty and one in seven people, mostly young children. Smallpox inoculation was based on one principle: as it could only be caught once, it was better to catch it when a person was in good health, well prepared, and while the epidemic was mild. Inoculation was introduced in England in 1720 but remained almost unknown in France until 1754. On 24 April of that year, Charles Marie de La Condamine, geographer and member of the Académie française, read a thesis to the Académie des Sciences in support of the vaccine. He achieved an instant result. His thesis was printed immediately and all of the Parisian periodicals reported on the matter, with most of them addressing the issue of

¹ *Le Figaro*, 13 November 2009.

² On the history of the notion of risk through the case of inoculation: Jean-Baptiste Fressoz, "Petite histoire philosophique du risque et de l'expertise à propos de l'inoculation et de la vaccine, 1750-1850", in Sezin Topçu (ed.), *Savoirs en débat*, Paris, L'Harmattan, 2008:

<http://www.insee.fr/fr/insee-statistique-publique/colloques/jhs/pdf2008/article-fressoz.pdf>

On the controversy surrounding inoculation: Genevieve Miller, *The Adoption of Inoculation for Smallpox in England and France*, Philadelphia, University of Pennsylvania Press, 1957, and Catriona Seth, *Les Rois aussi en mouraient. Les Lumières en lutte contre la petite vérole*, Paris, Desjonquères, 2008.

inoculation for the first time. Friedrich Melchior, Baron von Grimm, wrote, “Monsieur La Condamine has sparked a revolution in France”.

The most revolutionary aspect of La Condamine’s thesis was the new figure he created: that of the ‘geographer-spiritual adviser’. He pitted theorems against the moral scruples of parents who were hesitating to inoculate their children: to the question “Should a father willingly expose his son?” Condamine answered, “Yes, and I will *demonstrate* it”. He then concluded his line of reasoning with “It is therefore demonstrated in the strictest sense of the word”³. Q.E.D. That proof was based on a comparison of risks; the risk of dying of natural smallpox during the course of one’s life was 1 in 9, whereas the risk of dying from the vaccination was 1 in 300. Every reasonable individual *must* choose to take the smallest risk.

Risk was meant to change the readers’ minds. They were supposed to develop from an enlightened public that was interested in their health and medical debates into a “good public”: one made up of rational, free-thinking individuals who would put their reason to good use when faced with morally complex questions relating to life and death. According to La Condamine, in a society of rational beings there was only one way to behave. The geographer dreamed of a political body of individuals who were free, certainly, but who all marched in unison, given that they could not fail to agree with the results of the calculus of probabilities. Risk made it possible to have both freedom of individual judgment and behaviour control. It was part of a philosophical project that gave value to autonomy and was actively concerned to mobilise it for the public good.

The probability propaganda was also part of the ideal notion of a public sphere based on reading and writing. La Condamine continually criticised the judgment passed by a “frivolous and superficial public” where everything “is dealt with in conversations”. He set the public sphere of printed works against the sociability of salons: the former, which is conducive to presenting statistics, is viewed positively; whereas the latter is decried as the source of all misconceptions. The inoculist argument was characterised by an obsessive fear of networks, inter-individual connections, and the formation of group opinions. Individuals, in order to make a good judgment, must be *isolated by reading* and think for themselves. During the same period, Rousseau described how properly organising the public could enable general

³ La Condamine, « Mémoire sur l’inoculation de la petite vérole », *Histoire de l’Académie Royale des Sciences*, year 1754, 1759, p. 649-655.

will to be formed: “If, when the people, being furnished with adequate information, held its deliberations, the citizens had no communication one with another, the grand total of the small differences would always give the general will, and the decision would always be good”⁴. The ideal nature of the public sphere, from which election-based democracies are descended, was based on the individualisation of judgments and their summation.

Stories and networks: society’s construction of risk

Very few people agreed to be inoculated. In 1758, after four years of propaganda, La Condamine’s list of those vaccinated had not even reached 100. Ten years later, the number stood at just over 1,000 across the whole of France. The enlightened elite at whom the probability argument was aimed were in no hurry to be inoculated⁵.

The reasons for the failure of the inoculation campaign were numerous. They were, above all, moral: from the theology faculty to regional parliaments, it was rejected by every institution that defined what was lawful or unlawful. Describing the vaccination risk as a chosen, individual, and therefore moral risk oversimplified the nature of the danger. The moral problem did not lie so much in the choice as in the lack of choice – the lack of choice for children who were inoculated at a very young age, and the lack of choice for the families of those inoculated, who were exposed to the infection.

The failure was also psychological. The first to be inoculated were young aristocrats who saw the danger of inoculation not as a low risk requiring a rational decision, but in the context of the aristocratic ethos of achievement. An aristocrat would hesitate before inoculating his child, since it constituted a voluntary risk in “which there is no honour nor glory to be won”⁶. When the Duke of Orleans had his children vaccinated in 1756, it was praised as a heroic act, and an epic poem was even devoted to it.

D’Alembert proposed an in-depth analysis of the psychological failure of risk. Rather than calculating the objective risks of smallpox and vaccination, he tried to mathematise the procrastination it caused. Probabilities are not intended to ‘format’ common sense but to

⁴ Rousseau, *Du contrat social*, 1762, p. 213; English translation by G.D.H. Cole

⁵ La Condamine, “Suite de l’histoire de l’inoculation de la petite vérole”, *Histoire de l’Académie Royale des Sciences*, 1765, p. 505-532. The campaign for inoculation was particularly successful among slave owners. By 1756, thousands of slaves were inoculated on the plantations, while in Paris the campaign was in its infancy.

⁶ Luynes, *Mémoire de Luynes sur la cour de Louis XV*, Paris, Firmin Didot, 1864, vol. 15, p. 21.

describe it thoroughly, which is much more difficult⁷. First of all, it should be possible to take into account what was not yet called “preference for the present”. However, no theorem explains how to compare “an immediate risk with the sum total of the risks of dying of smallpox at each age⁸”. The “common logic” that d’Alembert analysed also incorporated the moral implication: losing one’s son to natural smallpox does not have the same *moral* repercussions as losing him on account of an inoculation, a factor that is not taken into consideration by probability theory⁹.

The risk was meant to bring rational individuals together but in fact divided people’s consciences. It was not normative, since people’s perception of it was idiosyncratic: “An individual judgment will be very different according to a person’s age, situation, and way of thinking and feeling, as well as the need that an individual’s family, friends, and citizens may have of him... it is possible that no two individuals will perceive it in the same way”¹⁰. The utopia of a public sphere centred on risk, which imposed itself on the consciences of all rational readers, dissolved into a multitude of bubbles that judged each situation according to their own criteria and environment.

Finally, and most of all, the failure of risk was pragmatic. Unlike the rational, disembodied readers of the utopian public sphere, the candidates for inoculation refused to trust assertions made about a risk whose apparent objectivity hid a work of construction that brought together thousands of questionable medical opinions on the links between cause and effect. The inoculation statistics seemed all the more dubious given that they were produced by the inoculators themselves. The more sophisticated candidates for inoculation preferred to judge for themselves by making use of their social networks.

Risk had the crippling flaw of letting vital biological information slip through the net. Smallpox was a multifaceted disease. Some “discrete” forms were benign, producing only a few spots without leaving any scars. At the other extreme, confluent or hemorrhagic forms were usually fatal. Between the two, there was a whole continuum of cases, symptoms and

⁷ D’Alembert’s criticism of probability theory and his remarkable analysis of inoculation are well known. See Lorraine Daston, *Classical Probability in the Enlightenment*, Princeton University Press, 1988, p. 82-89; Hervé Le Bras, *Naissance de la mortalité, l’origine politique de la statistique et de la démographie*, Paris, Hautes Études, 2000, p. 330.

⁸ D’Alembert, “Réflexions philosophiques et mathématiques sur l’application du calcul des probabilités à l’inoculation de la petite vérole”, *Mélanges de littérature, d’histoire et de philosophie*, vol. 5, Amsterdam, 1768, p. 277.

⁹ *Ibid.*, p. 312.

¹⁰ *Ibid.*, p. 282.

scars that did not lend themselves to statistical data processing. The principal challenge lay in knowing where the inoculated form of smallpox was positioned on that scale. The ideal answer was to judge on the basis of evidence, by examining the faces of inoculated patients and smallpox patients or, failing that, by listening to and reading descriptions of inoculated bodies. Stories, more than risk, provided socialites with information that was likely to convince them. And yet highly detailed inoculation stories proliferated in those circles.

First of all, aristocrats' bodies attracted public attention. The *Journal de Paris* thus offered to issue "the bulletin of the illness of persons whose health is of public interest". In 1765, the Duchess of Boufflers, who had been vaccinated, suffered a recurrence of smallpox. The news was widely reported in periodicals. According to Grimm, "What has happened to Madame de Boufflers is going to cause a major stir in Europe". The case also caused concern in salons. Walpole said it had been the only topic of conversation for a month¹¹. Inoculation accidents were a part of the "culture of news" that was a feature of elite society. The news had to be "extraordinary", presented in the form of short, entertaining stories¹². This focus on the exceptional profoundly irritated the inoculation propagandists: what was the point of their probabilistic arguments based on the repetition of irrefutable facts that may well have been banal but were certainly abundant, if the least surprising fact captured society's attention a thousand times more?

Secondly, patients had a habit of producing medical tales. Whereas in the 19th century doctors gradually gained a monopoly over medical writing and limited patients' stories to oral accounts, in the middle of the 18th century medical writing in itself had considerable epistemic value, as evidenced by the practice of epistolary medical consultation¹³. When an inoculation took place, it was common for a family member to write an "inoculation journal", giving an hour-by-hour account of the condition of the patient and his pustules. These journals then circulated among the patients' acquaintances, were publicly read out in salons, and could sometimes be found in the columns of a periodical.

¹¹ Letter from Horace Walpole to Mary Coke, 4 January 1766, *Horace Walpole's correspondance*, vol. 31, p. 93.

¹² A. Lilti, *Le Monde des salons*, Paris, Fayard, 2006, p. 320-3.

¹³ A patient would write a report on his illness and send it to a prestigious doctor who was far away; the doctor would then make out a prescription. Cf. W. Wild, *Medicine by Post*, Rodopi, Clio Medica, Amsterdam, 2006; S. Pilloud, "Consulter par lettre au XVIII^e siècle", *Gesnerus*, n° 61, 2004, p. 232-253; V. Barras., P. Rieder, "Corps et subjectivité à l'époque des Lumières", *Dix-huitième siècle*, 2005, n° 37. On the patient-doctor relationship in the 18th century: N. Jewson, "Medical Knowledge and the Patronage System in Eighteenth Century England", *Sociology*, 8, 1974, p. 369-385 and "The disappearance of the sick man from Medical Cosmology, 1770-1870", *Sociology*, n°10, 1976, p. 225-244; and Roy Porter, "The Patient's View: Doing Medical History from Below", *Theory and Society*, vol. 14, n° 2, 1985, p. 175-198.

In addition to these writing practices, the rules of social etiquette played a similar role. Rather than breaking social rules, smallpox redefined them. For example, it was usual to provide one's close friends with daily health updates. Casual acquaintances would send their servants, to whom a card was handed with a description of the patient's condition. In society language, this was known as "sending out one's visit". Propriety required people to make a "convalescence visit", which was the ideal occasion to form an opinion on the practice. The visitor could talk about the procedure and the pain, and see the results for himself.

The practice of writing about and visiting sick patients, along with the culture of reporting news, which was prevalent in elite society, created a highly efficient system for monitoring the effects of the procedure on a high number of patients, thus resulting in an extensive case history, continuous observation (not centralised or medicalised, but lay and widely distributed) and, finally, a reasonably complete description of the outcome of the procedure. Elite social customs made it possible to build up a network of information on the complications of the practice, gradually painting an entirely different picture of the dangers of innovation than the one offered by the probability technique.

Informing the public in the online era

We shall now return to the H1N1 flu epidemic and examine the reasons given for the failure of the vaccination campaign.

First of all, blame has been laid on the mass vaccination strategy that only France adopted, and the role of pharmaceutical laboratories in defining good immunisation practices (such as double injections). However, the problem was not so much the quality of the government's decisions, which are easy to criticise after the event, as its patent inability to convince the public of their merits: at the beginning of 2010, only 8% of people had been vaccinated, while the government was expecting the figure to reach 75%.

There has been criticism of "government communication" and the fact that it was anxiety-provoking. Its focus on the impending catastrophe did not convince a public already tired of continual health alerts¹⁴. On this point, the debate replayed the confrontation between those who attacked and those who championed the precautionary principle: the former

¹⁴ "Lutte anti-grippe A : un échec du catastrophisme", interview with Frédéric Keck, *Le Monde*, 9 January 2010.

criticised it for leading to ill-advised decisions (leaders felt compelled to exaggerate the threat, for fear of later being held accountable for failing to act¹⁵); the latter challenged the prophets after the event.

Finally, according to Thierry Saussez, the government's director of communications who oversaw communication on the H1N1 virus, the impact of the Internet was underestimated, where "the incredible force of the anti-vaccination lobby, wild rumours, and misinformation generated by groups with hidden interests and 'sects'" prevailed¹⁶.

Seeing the vaccination failure in terms of communication with a message (probability), a transmitter (the Department of Health), a receiver (the public) and interferences (the Internet, rumours, anti-vaccinators, etc.) is deeply inadequate. Two and a half centuries later, it replicates the utopia of a docile public sphere that passively receives probabilistic information, with the malefic Internet replacing the frivolous salons. And yet, both today and in 1760, a patient's situation in no way corresponds to that hierarchical pattern of communication¹⁷: the social definition of the vaccine's side effects passes through the "networked public sphere"¹⁸ and crystallises in the countless medical accounts posted on the Internet. Since the very start of the vaccination campaign, medical forums and social networks were bombarded with questions, testimonies and photographs of rashes caused by the vaccine¹⁹. Following on from the Enlightenment patient who provided an account of his own body, Internet users who are vaccinated or who have the H1N1 virus recount their personal experience of the virus.

For those who are candidates for vaccination against the H1N1 virus, these stories constitute an invaluable resource. Probability has even less chance of convincing people because the risks at stake, the risks to compare, are low. Over the past 20 years, however, the sensitivity of epidemiological information systems has increased considerably. In response to

¹⁵ "Le principe de précaution oblige à exagérer la menace", interview with François Ewald, *Le Monde*, 9 January 2010.

¹⁶ "Gestion de crise et communication", interview with Thierry Saussez, *Le Monde*, 13 January 2010.

¹⁷ For a precise case study on molecule tests to combat the AIDS virus, see Steve Epstein, "The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials", *Science, Technology, & Human Values*, vol. 20, n° 4, 1995, p. 408-437.

¹⁸ Yochai Benkler, *The Wealth of Networks. How Social Production Transforms Market and Freedom*, New Haven, Yale University Press, 2006, analyses the transformation of the information economy from 'mass media networks' into a 'networked public sphere' (collaborative tools, blogs, Wikipedia, forums, software open source, etc.)

¹⁹ At the beginning of 2010, the Facebook page 'I'm not vaccinated against H1N1 and I'm still alive!' had almost 800,000 fans.

the SARS epidemic, a monitoring system for mortality linked to respiratory infections was established in many countries, enabling epidemiologists to detect risks that cannot be perceived on an individual level²⁰. Therein lies a new challenge for contemporary biopolitics: mortality is no longer the most significant factor in an individual's choice. A patient's assessment of the merit of being vaccinated against the H1N1 virus is based more on anticipation and comparisons of symptoms and various inconveniences, which is why patients' stories have become so important in the decision-making process.

How, then, to build on the cognitive richness of the masses, instead of once again blaming the networks and rumours? How to specifically reorganise the way in which people form opinions on the vaccine?

The first step must be to take note of the fact that people take a 'homemade' approach when they shape their opinions; for an individual, it involves cobbling together statistics, lay accounts, advice from friends and expert opinions. We must abandon the idea of an automatic, persuasive machine that produces a series of unequivocal opinions.

Secondly, we should make room for statistical information by showing the public the conditions required for its production and the limited nature of its reliability. Some websites already do so by allowing international comparisons of flu statistics (www.flucount.org).

Thirdly, a system for electronic medical testimonies should be established: the process of monitoring a vaccine as new as that of H1N1 has everything to gain from acknowledging reports volunteered by the public on any trials carried out. An example of the potential value of networks in the area of epidemiological alerts is the 'flu trends' programme established by Google. Given that patients tend to search online before consulting their doctor, Google has shown the correlation between the number of flu-related searches recorded in its search engine and the number of cases *subsequently* recorded by national health monitoring systems²¹.

²⁰ Conversely, the flu epidemic of 1969 (30,000 victims in France) passed by unnoticed. See Anne-Claude Crémieux, "Vaccin contre la grippe A et crises sanitaires : les Français sont-ils irresponsables?", *Transcriptases*, n° 142, December 2009.

²¹ www.google.org/flutrends/

While the correlation may seem valid between 2004 and 2009, it is necessary to see whether or not the anxiety over H1N1 and the epidemic's weakness invalidated the forecasts based on counting Internet searches.

Nothing better symbolises the failure of risk and the importance of patients' accounts than the success of websites devoted to medical testimonies in the United States. Startup companies are already prospering in the field. The website www.patientslikeme.com offers an exchange platform for patients suffering from serious chronic diseases (such as Parkinson's, multiple sclerosis or AIDS). Patients recount their experiences of living with the disease, their medication and symptoms. In particular, they can cross-reference different criteria in order to find a patient with a similar profile. The website offers a 'time machine' function which, based on stories told by similar patients, draws up a future medical scenario. Patientslikeme thrives of the notion of autonomy and managing one's own life. The Internet user is invited to click on tabs such as 'take control of your health' or 'manage your epilepsy like a pro'. In January 2010, more than 54,000 patients had posted their medical data on the website, thus providing a far greater cross-section than any used in traditional drug monitoring. That success also shows people's refusal to subsume their case into a mass of generic cases, and their desire to share their experience with similar patients.

However, the aim of patientslikeme is to turn patients' stories into medical data and then sell that data to pharmaceutical laboratories and insurance companies. Public health systems should establish a network of medical testimonies to avoid the risk of clinical information becoming privatised.

The democratic illusion of the electronic public space

The vaccination failure of 2009 raises the more general question of the way in which public opinion on technoscientific questions is formed. As the founding figure of our democracies, the rational citizen – with the public good in mind, and an opinion that is formed individually – is no longer suited to resolving these complex questions. It is therefore necessary to provide the public with the intellectual and democratic technologies that will enable it to form enlightened technological opinions. Currently, there is a danger that the Internet, in its present form, will be used as a replacement for that political role.

First of all, the Internet creates the illusion of a flat world made up of users who have no background and who, when set in the same electronic space, all appear equal. Yet electronic representation is not equally distributed. Many people do not use the Internet, and it would be politically problematic to overlook them. The Internet over-represents active, involved minorities to the detriment of the masses who do not express their opinion: search

engines carry out a selection of opinions without necessarily revealing the relevance criteria (ranking), and so users develop multiple strategies in order to slant the results of the ranking algorithms²². Before making use of the Internet as a means of representing and evaluating the ‘weight’ of people’s opinions, it is necessary to first analyse it as a construction.

Secondly, while the Internet is an excellent tool for gathering opinions, it is far less effective when it comes to making people communicate. The Internet engulfs time: it is generally quite difficult to find out a user’s background, to pinpoint the date of a post and therefore to grasp the *dynamic* of an argument. However, the whole point of a sound, deliberative approach is precisely to enhance the dialogic quality of a debate, to enable opinions to shift or change, and to allow unexpected opinions to surface. The Internet is not a space for deliberation: rather than a debate, it gives rise to an infinite proliferation of electronic monologues.

Finally, the public’s fixation with the Internet risks creating the false impression that the politics of technoscience can be reduced to an interlocutory activity involving the production and judgment of statements; it risks making us believe that technoscience is systematically subject to public debate. However, the asymmetry between Internet users is produced upstream, in their varying capacity to make money and to equip themselves with tools and knowledge. It is then possible that the public’s evaluation always comes too late, and systematically favours the powerful to the detriment of ordinary people. By focusing on the Internet, the public runs the risk of chasing rainbows and failing to monitor other non-public spaces (R&D policies, the market, investors, expert committees, startups and multinational firms), which are, nevertheless, vital in regulating contemporary technosciences.

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²² Countless companies thus offer to artificially enhance the ‘e-reputation’ of a firm, a brand, a person, or a political party.