

Chapter 4

Legislators' Plague: How History of Science Can Explain the Struggles of Universal Pandemic Responses

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ABSTRACT

This chapter brings important novel insights and perspectives to the urging contemporary debate on public hygienist policies. The authors intend to explore how an episode of history of science can be used to explore the struggles of universal pandemic responses. The focus will be on the inception of science-based legislation, created to deal with public health emergencies, and their communication and social acceptance. They argue if any of the symptoms of science misinformation and a weak science foundation of legislative action identified in the 2020 coronavirus pandemic can be identified in an early 20th-century outbreak of bubonic plague in Portugal. They present a national legislative policy timeline towards the pandemic effort in the form of consolidated legislative responses to fight Porto's emerging pandemic in 1899. They also provide future studies on science-based policy with newfound material, aiding the characterization of the communication and eventual harmonization of concerted responses in preempting the spread of pandemics.

INTRODUCTION

The rule of law is one of man's best tools for a societal containment of infectious and communicable diseases. Social restriction measures can, at least, be parallel to the range of common medical indications. As stated in some of early 20th century pandemics, like the "Spanish Flu", compulsory home isolation

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and sanitation measures were not particularly effective on controlling the epidemic spread (Alvarez, 2009). But on the other hand, legislative interventions such as the restriction of public movements and gatherings, combined with epidemic surveillance, have proved effective on some pandemic outbreaks (Medicine, 2007). The compliance on the directives on global public health information have prompted many countries to revise their public health laws. In some cases, it took the impact of a full-blown pandemic crisis to several countries made their ground-breaking legislative actions on sanitation and public health. However, sometimes legal bills were based on old and flawed knowledge as the development of contemporary science was thriving in the early 1900s (Martin, 2009).

The concept of “flawed-science”, can easily be linked to the way proper science is disseminated. The ongoing memory of “fake-news” and misinformation on the recent SARS-CoV-2, Coronavirus pandemic in 2020, brought a negative frame when exploring the boundaries of science communication. This is important not only to the crystallization of public understanding of science, but also the bear concept of science-based policy. No one can dispute the importance of mandatory social distancing and compulsory personal protection equipment use on the containment of the COVID-19 pandemic. However, only with solid, proven and intelligible scientific evidence backing individual and collective restrictions of liberties, will the public accept dimly any sanitary directives. And in the “Misinformation Age”, this is no easy feat. Mainly, because it is often claimed that this information reality is driven by globalization social repercussions and the readiness of an unprecedented cooperative scientific endeavor. But is it so? Pandemics have been around for quite a while, as history tells us. Without the, sometimes, claustrophobic environment of social media and digital journalism, was there any room in the past for science misinformation? Haven't we experienced any case of misappropriation of scientific elements on the forging of information? What about legislation? Were any restrictions made, based on scientific evidence?

There are so many examples where science-based evidence was cast aside within the making of imperative political controls. Even today, at the “Age of Information”, false data and its dissemination through digital channels, poses as extreme significance to construct and characterize designs of knowledge circulation. As such, it imperative to clarify if the legislation made on sanitary laws in the context of a pandemic, can be important towards the definition of science policy and public health. And if so, how does the scientific knowledge spreads in this network of scientists, policy-makers and the public?

In this chapter, we want to explore how an episode of history of science can be used to explore the struggles of universal pandemic responses, recently on brink due to the 2020's coronavirus pandemic. The focus will be on the inception of science-based legislation, created to dwell public health emergencies, and their communication and social acceptance. We will argue if any of the symptoms of science misinformation and disparity on science foundations of legislative action identified in the Coronavirus pandemic, can be identified in an early 20th century outbreak of bubonic plague in Portugal. Our methodology is twofold. First, we report on the national legislative policy timeline towards the pandemic effort, naming pivotal elements of its inception, dissemination and acceptance. Secondly, it is presented a consolidation of legislative responses to fight the emerging pandemic in 1899's Portugal. A secondary goal is to provide future studies on science-based policy with newfound material, aiding the characterization of the communication and eventual harmonization of concerted response in preempting the spread of pandemics.

THE 1899 OUTBREAK OF BUBONIC PLAGUE IN PORTO (PORTUGAL)

About Porto in 1899 and First Echoes of the Plague

In the early 1900s, the city of Porto was the pioneer of photography and cinema, the Iberian precursor of the electric car and city gas lighting (Sousa, 1988). However, it was also the “cemetery” and “mortuary city” with one of the highest mortality rates among European cities, especially due to infant deaths. Between 1893 and 1897 infant mortality was about 120 ‰, with a global death rate around 36% in 1900 (Pontes, 2012). Roughly one third of the population lived on “islands”, without the minimum of hygienic conditions, presenting an outdated medieval profile, with common open street waste dumping (Martins e Silva, 2020). As such, it was a perfect harboring environment for a “potential plague”, with a common public conscious of insecurity and panic on past successive seasonal, and deadly, epidemics in the nineteenth century (Neves, 1903).

On July 6th, 1899, Ricardo Jorge, municipal physician and director of the public sanitation post of Porto, made a sanitary visit to three houses on the street “Rua da Fonte Taurina”, where Galician shippers lived (Echenberg, 2007; Jorge, 1899). There, he described an event as “an epidemic focus of a disease”. In his words, he deemed the situation as “serious and unusual”. He then instructed city officials to disinfect the buildings where the so called “disease” had manifested itself (Jorge, 1899). The sick, however, were to be transferred to the then central Hospital of Porto, the Santo António Hospital. Ricardo Jorge, on the same day, officially reported the occurrence to police and health officials, who deemed the compulsory cleaning and disinfestation of public vicinities of the “Rua da Fonte Taurina”.

The unknown disease progressed unnoticed, having been confused with typhus or typhoid fever by different doctors (Jorge, 1899). The most common reported symptoms of the illness were prostration, fever, gastrointestinal changes and ‘text-book’ ganglion engorgement (that characterized bubonic plague) in armpits and groins. Subsequent obligatory epidemiologic inquiries highlighted that this was not a common situation. Prior to this event, reports from Ricardo Jorge’s office found a month earlier, on June 5th and 6th, similar symptoms on a few Porto citizens, compared with the “Fonte Taurina” (Pontes, 2012). At the time, the diagnosis of Bubonic Plague was discarded. Not from a pure medical standpoint, but it was deemed “highly improbable” that this was the case.

What was the reason for such a position? Epidemic inquirers noted that commonly known vehicles for the Plague’s transmission, foodstuffs from the Oriental (mainly Chinese), were subjected to food safety regulations (Jorge, 1899; Martins e Silva, 2020), designed specifically to halt such a transmission (namely, the Portuguese Sanitary Warning of April 14th, 1897). As per law, all these foodstuffs came to Porto’s shores by European Free Ports, abiding these rules. Thus, legislative reality was apparently sufficient to the National Governing bodies to discard any diagnosis of Bubonic Plague. It should be stressed that this decision was made without a single result of bacteriological test.

The government was immediately informed of this communication, and, after hearing the public health advisory board, the magistrate was instructed “not to relax the precautions already adopted”, recommending “rigorous vigilance, to respond to any new suspected case with the appropriate measures, and compulsory telegraphic participation of the result of the bacteriological analysis, as soon as it was known” (Kingdom, 1899d). They were, however, encouraging news stating that since the last case, on July 6th, no other individual had manifested in the period of thirteen days.

After the first contact in July 6th, Ricardo Jorge was aware of at least 17 cases, 6 of which perished in days. This evolution was accompanied with new reports of people in the vicinity of the “Fonte Taurina”

that had revealed suspicious symptoms and were awaiting further study. By July 9th, Ricardo Jorge was entirely convinced that the differential diagnosis of the disease was indeed the Bubonic Plague (Jorge, 1899). He was able to identify two potential first patients with the disease. He marked two suspected cases, one individual that worked in the unloading of wheat from New York, and other in the unloading of codfish from Norway. His evaluation was reported in two missives sent on July 12th and 28th to the city authorities and the Government (Fereiro, 1899).

The aforementioned municipal doctor, who tirelessly dedicated himself to studying and fighting the epidemic, emphasized in his report of July 28th that it was “his medical conviction that the disease should be classified as Bubonic plague” (Jorge, 1899). With this, the government legislated on the transport of the sick and instructions were given about the sanitation of public health surveillance. This included mitigation of sources of infection and the demolition or improvement of buildings in any way harmful to public health. A similar instruction was then made out for all districts contingent of the city of Porto (Martins e Silva, 2020). The adopted measures, allied with the prolonged uncertainty in the diagnosis of the epidemic, justified that the situation would not be contained soon. In fact, by the end of July 1899, the confirmed cases did not exceed 39, nor the number of deaths 13 (Echenberg, 2007). However, in light of the latest technical opinions, more assenting of the pestilential diagnosis, the advisory board of public health has proposed the adoption of various measures for the complete extinction of the epidemic. This was the general government consensus on August 17th, 1899, the day was issued the first major legislative effort to mitigate the pandemic (Kingdom, 1899d)

But the effort came with short notice. On August 8th, the bacteriological analysis of the pus collected from one patient's injuries were complete. Ricardo Jorge was able to isolate the bacterium *Yersinia pestis*, thus confirming the diagnosis of Bubonic Plague (Jorge, 1899). This was later confirmed by fellow Portuguese physicians, and weeks later by foreign experts with the Pasteur Institute (Calmette, 1899). Historians later confirmed that only with the international evaluation did the government pushed to harder restrictions, as we will later see in this chapter.

The silver-lining in the midst of this emergency, was that the plague has a cure. The early works on an antiserum obtained by Alexandre Yersin permitted the development of the first plague vaccine by bacteriologist Waldemar Haffkine in 1897 (Yersin, 1897). As requested by the government, on September 3rd, a French delegation from the Pasteur Institute arrived in Porto, with instructions to assess the “curative and preventive” value of the vaccine (Calmette, 1899).

By September and October of 1899, a scientific evaluation of efficacy of the vaccine was immediately authorized by the appointment of an international commission of physicians (Kingdom, 1899h). In the light of the results of its various trials, this committee gave immediate consent to the use of anti-pest serum on all patients admitted thereafter to Hospital environment (Montaldo y Peró, 1900).

After that, the state of emergency clearly dropped as the days gone by. At the end of 1899, the press reported the epidemic in Porto had declined since November, with a decrease in emergence of new cases. As such, the Government declared the official end of the pandemic by the end of December 1899 (Kingdom, 1899f). During the aftermath of the catastrophe, it was found that of the 320 patients registered between June 1899 and February 1901, 132 succumbed (Souza Júnior, 1902). In the early 1900s, the disease became rare and the last patient was hospitalized on January 16th (Fonseca, 1902).

Misinformation of the Plague

An interesting analysis on the global aspect of this pandemic, gave us detailing insights on the actors and their communication network of influences they sustained during the period. Historians have identified common traits, between Portugal and other countries, on the behavior of pandemic response from different actors such as doctors, policy makers, journalists and even the authorities (Echenberg, 2007; Pontes, 2012). In the Portuguese case, those traits come as early as the report of the first cases of Bubonic Plague in Porto.

Perhaps as the most outstanding one, in a first stage of events, the plague was downplayed by policy makers and journalists. The first news reports of the, then eventual, widespread of Bubonic Plague in Porto did not come forward until a full month after the original occurrence on July 4th, 1899 (Pontes, 2012). And even when the Portuguese government started to address the severity of the situation in August 1899, the first action of the Porto based newspapers was to propagate a “process of denial of the irruption of the plague”. A noteworthy case of local misinformation spreading, these media outlets chose to “underestimate the disease” while they reported the action of local authorities. And despite reports of prominent municipal doctor Ricardo Jorge having diagnosed 17 cases of Bubonic disease by July 7th, his warnings to a potential epidemiological crisis to the city’s Civil Government, Porto’s newspapers reported that there “was no epidemic raging in Porto” (Bombarda, 1899).

In the thirty days after the first case reported, the daily Porto newspapers underestimated the disease and the risk of an epidemic (Pontes, 2012). They reported on the steps taken by the local authorities, downplaying the known opinion of the public health authority at the time. They have also reported that “the truth demands that it be said that, fortunately, in Porto, no epidemic has been manifested”, and assessing such a nonsense could result in many ships being afraid of entering our port, thus harming the local economy due to summer vacations to the northern beaches (Martins e Silva, 2020).

The silence complicit with the authorities would later be assumed, as one publication will, on August 13th 1899: “The news was such that, tacitly, it was imposed on everyone the obligation not to disclose it without the bacteriologists proceeding to thorough examinations (...) without the disease being definitively diagnosed” (Pontes, 2012). The newspaper claimed that it did not want to “needlessly alarm a city”, but guaranteed that the published articles, up to that point, “opened a true campaign against the filth spreading action on the streets, poisoned by the pestilence of the gutters”.

ON NATIONAL PANDEMIC RESPONSE: A LEGISLATIVE APPROACH

This section aims to address the struggle of legislative pandemic responses in the outbreak of Bubonic Plague in 1899, Porto, Portugal. We will turn our focus to the timeline of policy publication, created to face public health emergencies. The description of the legislation will be accompanied with the main outtakes and consequences of each legislative turn, emphasizing the impact of its communication and parallels with the scientific knowledge known. The core research of this section was the round-up of all the legislation produced by the Portuguese Central Government on the Porto’s public health crisis in 1899. Also, we present the transcription of the main legislation produced by foreign countries, especially of economic nature to deal with the mentioned sanitation crisis.

National Legislative Timeline on Pandemic Prevention

August 17th, 1899: Decree (Ministry of the Kingdom - Government Gazette No. 185, August 19th, 1899) establishing several health measures in view of the current circumstances of public health in Porto (Kingdom, 1899d).

On this date, it marks the first policy recognition of the plague in the city of Porto. Despite having the first unequivocal bacteriological result of the plague in August 8th, it took the government nearly 10 days to legislate on the matter. We can talk, per se, on inception of science-based legislation, as The Government officially announced the existence of a Bubonic Plague epidemic in Porto. Summarized, there were made a set of restrictions on the city's communication with the outside. Namely (Martins e Silva, 2020),

1. Suppression of excursion trains, fairs, pilgrimages and other gatherings that led to the entry or exit of holidaymakers in or from the city of Porto;
2. Medical inspection of all train passengers and staff leaving Porto; anyone with suspicious symptoms of plague was prevented from travelling;
3. Travelers' luggage and goods were disinfected on departure from Porto; goods which did not have such treatment were carried by sea;
4. Passengers in transit carried a bulletin containing the results of such inspections;
5. Passengers in transit had a guide containing the results of the inspections to present at the destination;
6. Passengers and train staff had to report to the medical inspection within nine days of arrival; the inspection was carried out in Lisbon by the health sub-delegate and, in the remaining destinies, by the municipal doctor;
7. Passengers with suspected signs of illness were referred for isolation in hospital facilities, lazarettos or wards, as available locally;
8. The responsible for any place of accommodation would have to report daily to the police the origin of all individuals who settled there;
9. Violators of the previous provision were subject to penalties of qualified disobedience and a fine, and, when found in contravention, immediately arrested.

August 23rd, 1899: Ordinance (Ministry of the Kingdom - Government Gazette No. 189 of August 24th, 1899) appointing a commission to study the sanitary conditions of the city of Porto, and indicate whether it would be appropriate to modify the provisions for the defense of public health applicable to the same city (Kingdom, 1899g);

Despite the categorical statements of the technical and official stations, namely the Porto's Public Health Department, by issuing this ordinance, the Government continues to put in doubt that the diagnosis of Bubonic Plague is appropriate. This makes the assertions that science has driven the legislation made, but was not entirely incorporated on the core of the law's priorities. This is also clear by the intent of the Government to reason to the nature of the epidemic and to dispel any political doubts, brought sometimes even by some physicians who were not with absolute conviction of the need to execute the various measures of sanitary defense issued on August 17th. Therefore, the government discharged to appoint a commission to urgently study Porto's sanitary conditions, and give their opinion about them. The aim was, as well, to assess the need of modifying the measures to defend the public health taken

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just days before. This commission was composed by Members of the King's Council, Medical professors, and naval physicians.

August 23rd, 1899: Decree (Ministry of the Kingdom - Government Gazette No. 191 of August 26th, 1899) interrupting the unconditional freedom of Porto's relations with the rest of the kingdom by means of a cordon sanitaire while the bubonic plague epidemic persists in that city (Kingdom, 1899c).

Addressing the proposals of the Public Health advisory board, including the bacteriological results evaluated by Portuguese and International physicians, the Government decreed officially that there was in fact an epidemic case of Bubonic Plague in Porto. As a consequence, the isolation of the city of Porto by military forces was enforced, consisting of a large terrestrial and marine 'sanitation cordon'.

The Decree states that while the epidemic lasts in the city, the unconditional freedom of its relations with the rest of the kingdom will be interrupted by means of a sanitation cordon, arranged in the most suitable way for the defense of public health. This encompassed neutral posts for the supply of that city as people, luggage and goods coming from the Sea Port, will only be able to leave through those points. It also stated that it would be built a railway disinfection checkpoint in the form of a quarantine-type edification, called 'lazareto', in the nearby village of Granja. Also, all public services, in any way are related to sanitary defense, will be adjusted in harmony with the respective requirements. Any person who tries to evade the surveillance of the cordon, subtract any objects from the sanitary surveillance, or transgress in any way the precepts of sanitary defense, will be punished with imprisonment from three to six months, which in no case can be replaced by a fine. Thusly, all individuals referred to in this article may be imprisoned without charge, and held in custody until further trial.

September 6th, 1899: Ordinance (Ministry of the Kingdom - Government Gazette No. 201, September 7th) appointing two government delegates, together with foreign physicians charged by their governments with the study of the epidemic, which has broken out in the city of Porto, to form an extraordinary commission to experience the preventive and therapeutic value of various serums and vaccines against bubonic plague (Kingdom, 1899h).

Agreeing with the proposal of the Civil Governor of the Porto, it is decided to appoint professors Luiz da Camara Pestana, director of the Royal Bacteriological Institute of Lisbon, and Ricardo de Almeida Jorge, director of the Municipal Public Disinfection Station of Oporto, delegates of the government, together with foreign physicians, in charge of the study of the epidemic in Porto. Also, they shall constitute an extraordinary commission to experience the preventive and therapeutic value of the various serums and vaccines against the bubonic plague, whose result will make a detailed report, which will be published in due course.

September 13th, 1899: Decree (Ministry of the Kingdom - Government Gazette No. 207, September 14th) regulating the relations of the city of Porto with other cities and towns of the kingdom by land, in order to reconcile their interests with the defense of public health (Kingdom, 1899e).

Almost a month into the Porto's sanitary confinement, it became clear that there were some miscues on the inspection and evaluation of passengers coming to Porto by train. Also, it enforced the reward for any reported or captured passengers who had avoided health inspection.

To regulate the relations with the other cities and towns of the kingdom by land routes in defense of public health, after hearing the advisory board of public health, the Decree determined several reinforcements to the August 17th legislation. The sanitary cordon established around Porto was to be maintained, as long as it is considered indispensable for the sanitary defense of the kingdom. Now, it clearly stated that, under any circumstance, no passenger will be allowed to leave the area around the sanitary cordon, other than the railroads, and other exceptional points, concerning prior and rigorous medical inspection

and disinfection of their clothes and luggage. It makes clear how social distancing of train passengers should be enforced in train trips. The passengers are to be transported in separate wagons with external designation of their origin, and can only leave in the stations declared in the respective guides or passports.

If any passenger shows any manifestations of suspicious disease during transit, the government inspectors will observe and enforce sanitary instructions, leading the suspect patient to a “lazaretto”. In order to be able to leave the cordon by train, all passengers should present a passport required with personal information, and their names are to be communicated telegraphically by the head of the station of departure to the stations to which they are destined. The heads of station, then had to inform of the arrival of these passengers, by telegraph, to the competent county administrators, or police commissioners, if there are any. When through health inspections or a suspected disease is observed, all precautions of isolation, disinfection and improvement recommended in the official instructions will be taken, and as soon as it is found to be a case of plague.

September 13th, 1899: Decree (Ministry of the Kingdom - Government Gazette No. 207 of September 14th, 1899) determining that the reporting of any case of contagious, epidemic or suspected disease, is to be made by the voluntary workers in a continuous act to the respective observation and directed in Lisbon and Porto to the civil governors, and in other lands to the police commissioners or county administrators in their absence (Kingdom, 1899a).

The Government considered that the regular performance of the sanitary police was in jeopardy, prompting action on convenient measures for the defense of public health. In accordance with their predispositions (as stated on Article 44 of the Decree of December 3rd, 1868), under which terms they are required to report to the competent authority any cases they observe of contagious disease. As such, in accordance with the previous restrictive norms, the Government decided that the report of any case of contagious disease, will be made in a continuous act to the respective observation, and directed in Lisbon and Porto to the competent civil governments. This Decree served, mainly, to aggravate the typification of the disobedience act on public health measures, as they will be punished with the penalties of qualified disobedience.

October 4th, 1899: Decree (Ministry of the Kingdom - Government Gazette No. 280, October 11th, 1899) imposing penalties on periodicals or newspapers in the city of Porto, which make untrue assessments about the epidemic there, or insult the authorities or those in charge of health services (Kingdom, 1899b).

As we have seen previously in this chapter, during the pandemic there were active cases of indented misinformation on the public health saturation of the city of Porto. Historians later materialized that this was decisive for the popular rejection of the sanitary cordon imposed by the Government. The news, reported by the periodical press, about disparity of methods in containing major epidemics, questioning scientific consensus on the nature of the infecting agent, and the “uselessness of sanitary cordons and lazarettos” (Howard-Jones, 1975).

On September 6th, the Portuguese Industrial Association requested the loosening of the sanitary measures imposed on the city of Porto by the Government. In the protest, they claimed that “false-news” published by certain newspapers of that city, were reporting that the origin of the restriction measures was due to the economic influence of certain traders who would benefit from the implosion of the city’s economy. Also, the Porto Society of Medicine and Surgery disagreed with the style and content of the news published from the local press, as it contributed to the “madness of the public” (Porto, 1899). As a consequence, the Association of Portuguese Doctors advised the public not to be alarmed by the news in the newspapers.

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Faced with this situation, the Government decided to sanction those responsible for the dissemination of “false-news about the plague epidemic or which challenged the measures taken to combat it, which delegitimized public authorities. The Decree of October 4th stated that was indispensable a prompt repression of the misdeeds of the periodic press by denying the existence of the bubonic plague epidemic in the city of Porto. Their actions in parallel with the timing of the measures adopted to curb it, disrespected public authorities, falsifying a common consensus on the defense of public health.

As such, Porto's periodicals or newspapers, were effectively suspended “for the time that seems convenient”, and in case of recurrence, “suppressed by order of the civil governor” (Pontes, 2012). The sanction was intended to any publication trying to instill in the public spirit the belief that there is no Bubonic Plague epidemic, or that the cases characterized or suspected of this disease are from any other cause. Also, as well as those who censure health protection measures against the disease, or on their pretext insult in any way the public authorities in charge of their respective execution. However, only scientific newspapers are exempted from the provisions of this article, unextendible to any transcriptions in newspapers of any other kind.

October 7th, 1899: Ordinance (Ministry of the Kingdom - Government Gazette No. 229 of October 10th, 1899) ordering the observance of several instructions for any manifestation of bubonic plague that occurs outside the sanitary cordon of Porto (Kingdom, 1899i).

With the opinion of the consulting board of public health, in October 2nd, on how to procedure in a event of manifestation of cases of Bubonic Plague outside the sanitary cordon of Porto, the Ordinance issued that any infected individual, verified or suspected, according to the opinion of the competent official physician, is to be it isolated in his house, and treated by the staff, that should be sent from the nearest hospital, under the direction of the referred physician. This action was made as to prevent any Hospital spread of the plague, as manifested by the board. The individual's house will have, when evacuated, rigorous disinfection, and objects of little value used by the sick person will be destroyed by fire. And even the house itself, if due to its condition, it cannot be effectively benefited, according to the competent technical opinions, it is also to be burnt down. After the disinfection procedures, the house should be uninhabited for at least 12 days.

This document also instructed the administrative authorities to take vaccination action to individuals destined in any locality for the treatment of the first cases of plague. And, when the manifestations of the same disease reach an epidemic focus, the sick should be removed to a private hospital, evacuating completely the houses to be disinfected. The authorities will also take the necessary steps so that, in case the newfound hot-spots of plague, they shall take the prophylactic instructions of September 6th, on the observance of which they should recommend to their administrators as a condition to achieve the annihilation of the disease germs.

December 23rd, 1899: Decree (Ministry of the Kingdom - Government Gazette No. 293 of December 27) revoking the decree of 4 October last on the periodical publications of the city of Porto regarding the epidemic of bubonic plague and the measures of health protection to combat this disease (Kingdom, 1899f).

In this Decree, the Government considered that, in the current circumstances on the city of Porto, the exceptional measures adopted with reference to the Bubonic Plague epidemic and the sanitary defense measures employed to fight this disease, have become dispensable. The final tool of the public health catastrophe was 320 patients infected by the disease, registering 132 deaths.

RESEARCH REMARKS

Takeaways of the Legislation

What stands out in the analysis of the legislation and the current historiographical takes on the case of Porto's Bubonic Plague epidemic in 1899, is that the legal timeline does not always follow the pace of science evidence. It can be made a parallel to the issue of public or policy-makers trust in scientists and their science. In this case, namely the 15-day span between the first bacteriological test and the first massive legislative action against the disease (the sanitary cordon). Despite this being a science-based decision, the timeline of the decision did not parallel the scientific timeline. The problem seems to be deeper than a simple miscue on science and policy (and politicians) articulation. Effective communication of science needs to earn trust as the core intangible value to the acceptance of scientist's beliefs, while sharing information of laboratorial results and working procedures. The question is why policy-makers need to understand science, and how laboratory language can be more relevant than any expert committee or legislative directive. Although politicians are concerned, in crisis situation to hastily achieving their goals, the need for science for society to solve complex societal problems cannot be underestimated. Sharing scientific information must be honest, transparent and problem-driven with accepted solutions.

Then how come the Portuguese government did not issued immediately harder measures when faced with the positive bacteriological result? The answer lies in the manifestation of intention by the Government in the early stages of the pandemic. It took more than a month to the central government to issue any legal matter on the "more than evident" sanitary situation, regardless of etiology, as reported by preeminent physicians, such as Ricardo Jorge. And even then, in the midst of August 1899, the official public discourse was that it shouldn't be made any preemptive decision on the basis of Bubonic Plague, despite having a positive laboratorial result in the beginning of the month. It seems that in this case, as we common see. In our present day, the role of science and its dissemination can fail to participate in communities and country's lives. This can be assessed because without this predicament there is not anything to fill the social contrast with scientific solutions. Communication between scientists, society and policy-makers makes it imperative to make a inter-disciplinary approach involving members of society, ensuring the science meets humanity's needs.

What does this episode tell us how we, as a society, evolved in compromising with scientific evidence? Any emerging information without authenticity or marked as unauthentic, is of critical concern brought by communication from different agents, cultures, and how they are interconnected. Like the example of the "false reality" that was disseminated by the Porto's newspapers, contradicting the city's health inspectors. False informations, like in this example and in today's "Age of Misinformation", are provided to deliberately bring disbelief of society in science and its agents. And it is of no dispute the urgency to counter these activities. However, consider the action taken by the Portuguese government to stop "fake-news". An official Decree deemed the suspension of the intended periodicals, "for the time that seems convenient". A deliberate act of preemptive suppression of freedom of press, in a time where press censorship was a common reality in late 19th century Portugal. It is not our intent to address the issue of accountability and the means to mitigate freedom of speech. However, it is relevant the way the Government dealt with the issue. Instead of addressing misleading information and the provider, correcting and instructing on science education, the answer was to "kill the messenger". Like today, effective science communication contains data and evidence, written or visual. Only this way can a message be converted into new habits and culture. Just publicizing directives on how "what not to publish", even in a

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ensorship case, is not sufficient to tackle misinformation all together. Proper information check is need and desired, but it also needs to be corrected and its outtakes amplified, issuing new advisories. Instead, added development and investment is needed to instruct specially those who don't have a scientific background. On the case of disrespecting the "sanitary cordon" of Porto, maybe this was the case when people started to loosen their restrictions. But it also be noted that even some of the so-called "literate" classes doubted the seriousness of the situation, or contested the sanitary measures imposed (Afonso, 1964). With the ongoing position of the Government in making effective the isolation of the city of Porto, the city's commerce commission, and the city mayor, both resigned in September 1899, just weeks into the position of the cordon. Some days later, the city's industrialists had shut down the factories and trade and industry strikes followed. This action was the answer to an ongoing city in economic asphyxiation with serious social issues. These do not explain such a harsh action, but are not to be downplayed when design an effective communication of public health policy (Pontes, 2012).

Transposing this to our current problem with scientific misinformation, it is better communication that counters infectious diseases. The scientific community must be allowed to take a stand, having space at the public stage to convey accurate scientific information to the general public. It needs to be done as to address public understanding of science perhaps the most prominent tool to fight global issues like climate change and public health.

In times of uncertainty, especially in a public health crisis, governments should prioritise transparency and quick reactions. Trust in government and organisations is enhanced when there is transparency in the information presented and the decision-making process. Public trust is a pivotal resource to gather public cooperation and sustaining behaviours needed for pandemic management (Devine, 2020). These are a common factor identified in the Portuguese case, that we can certainly take the mantle on today's challenges.

CONCLUSION

This narrative is part of a broader initiative of historical nature, lead us to the intricacies of Portuguese legislative production during the bubonic plague pandemic crisis in Porto, 1899. We brought attention to the timeline of policy events during this public sanitation crisis, making parallels between past and present-day issues on communication and implementation of science-based policy.

We discussed how an history of science event can be used to study global challenges in public health classes. In this episode, we identified a so called "pact of silence of the press" was not a national exclusive in the third global plague pandemic. A brief analysis allows us to verify that, regardless of the point on the planet, there are common traits in the behavior of the various actors in the epidemic. As we have seen in this Portuguese case, the denial of the plague, despite medical evidence, popular confrontation with the sanitary measures and the unpreparedness of the sanitary mechanisms, are factors thar have been repeated, today, in our struggle against COVID-19.

We believe this chapter provided a useful tool to explore the value of good science communication strategies, and how common mistakes on health crisis are not just emergent as we sometimes think. We hope our recommendations prove useful for teachers and students as a starting point material to a broader discussion on new empirical frameworks.

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