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## HISTORY | REVIEW ARTICLE

# Bioterrorism in the literature of the nineteenth century: The case of Wells and *The Stolen Bacillus*

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**Abstract:** This article analyzes H.G. Wells' *The Stolen Bacillus*, one of the first works of fiction to deal with bioterrorism. Although the use of biological agents by armies in warfare is probably as old as mankind, since the last Iraq War, the fear of biological agents being used in terrorist attacks has increased. Although bioterrorism might seem a problem beginning in the late twentieth century, Wells' short story, written in 1894, foreboded the threat of an attack with biological agents. The article reviews previous analyses of this work of fiction, contextualizes it in Victorian British society's beliefs about anarchism and discoveries in bacteriology, and discusses other possible influences on Wells' work of fiction.

**Subjects:** History of Medicine; History of Science & Technology; Modern History 1750–1945; Science Fiction

**Keywords:** bioterrorism; H.G. Wells; science fiction stories; anarchism; history of medicine; British literature

### 1. Introduction

As McLean (2011) recently stated, Wells (1866–1946) was “one of the most important and influential authors of the late nineteenth century and early decades of the 20th century. He has been identified as one of the ‘founding fathers’ of science fiction.” In the last two decades, interest in the interconnection between literature and science has increased, and some of Wells' major works have been reassessed, for example, *The Invisible Man* (Sirabian, 2001), *The Island of Doctor Moreau*

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### PUBLIC INTEREST STATEMENT

The term bioterrorism describes the utilization of biological agents by a group to achieve a political or ideological objective. They have been used in warfare during many centuries but its presence in terrorist attacks is a very recent issue. Several events have been described in last two decades and even novels and feature films have incorporated this element in their plots. The first reference to bioterrorism is *The Stolen Bacillus*, written by H.G. Wells and published in 1894. The British writer described the attempt of an anarchist to poison the public water of London with cholera bacilli. This paper analyzes Wells' work in its historical, social, scientific, and conceptual contexts to understand how Wells made this early contribution to a new topic in science fiction and its symbolic value. The world would wait almost a century to understand the prophetic aspect of his work.

(Ferguson, 2006), and *The War of the Worlds* (Williams, 2008). However, his short stories have received less attention (See McLean, 2011, for a detailed analysis).

Between 1887 and 1898, during his early years as a writer, Wells published over 200 works devoted mostly to science divulgation but also to science fiction subjects (Hughes & Philmus, 1973). Many of these works have been considered of potential value for understanding his later works, such as *The Time Machine*, *The Island of Doctor Moreau*, or *The First Man in the Moon* (Philmus & Hughes, 1975). However, books analyzing Wells' works have largely ignored the influence of his short stories. For example, Alkon's book on science fiction before 1900 only mentions *The Stolen Bacillus*, one of the most interesting short stories of this early period, in the list of works cited at the end of the book (Alkon, 2002). McLean (2011) noted that "Despite such recent research, the short stories remain vastly under-represented in Wells studies and deserve renewed detailed study, with the only major monograph in this area, John Hammond's *H.G. Wells and the Short Story*, having appeared in 1992."

*The Stolen Bacillus*, originally published in 1894 (Wells, 1894a), is about an anarchist who steals a vial of what he believes to be cholera bacilli to poison the water supply of the city of London. This story has been considered as an example of the worries of late nineteenth-century Victorian society concerning anarchism and the possibility of germ warfare (Monegato, 2009/2010). It can also be read as a story influenced by the microbiological discoveries and cholera epidemics in London during the previous decades. However, Wells' story is also of interest to modern readers as a science fiction work pointing to the threat of bioterrorism in cities. Interestingly, it also points out the *naïveté* of such threats, given the difficulties involved in carrying out bioterrorism.

In the present paper, we analyze *The Stolen Bacillus* in the context of politics and science in Great Britain at the end of the nineteenth century. We begin by analyzing the way anarchism and terrorism were considered at the time the work was written and discoveries in bacteriology that might have inspired the choice of cholera in the story. We then discuss the importance of the work in the history of literature and its relevance to bioterrorism in modern society.

## 2. The political and scientific context

### 2.1. Anarchism, politics, and British public opinion

In *The Stolen Bacillus*, the villain is an anarchist who steals of a vial of what he believes is cholera bacilli with the aim of poisoning the city's water supply. Hashimoto (2003) attributes Wells' choice of an anarchist to the many terrorist acts with dynamite that scared Londoners between 1881 and 1892. It should be said, however, that these acts were carried out by Irish nationalists. An analysis of how Wells' contemporaries considered anarchism may help us understand his choice of villain's political motivations.

In his analysis of attitudes toward anarchism in late nineteenth-century Victorian society, Monegato (2009/2010) pointed out that Londoners at that time were really worried about attacks by anarchists. Bomb attempts in Europe and even in the United States fed their worst fears. The Paris correspondent of *The Times* wrote in 1892 "No possible political end can be adduced to justify or explain the detestable acts which have startled us all. It is clearly the war of disorder and chaos against order and law. It is crime for crime's sake. It is murder and havoc acting in the service of covetousness, hatred and all evil. Undoubtedly, all anarchists are not assassins, but all assassins are ready to increase the army of anarchists and it really is with an army of murderers that society has now to deal. These organizations are not peculiar to France. Everywhere there are men who are the enemies of society, eager to deal it blows, provided always that they themselves avoid punishment" (Anonymous, 1892a). Although British anarchists were not committing violent actions at the time, two odd events deepened (or justified) social mistrust of this ideology: the Walsall Anarchist bomb plot and the Greenwich Observatory bomb. A detailed account of both episodes can be read in Quail (1978).

The first episode was a strange story in which a group of anarchists from the town of Walsall and from London was accused of making bombs in 1892. In fact, none succeeded in manufacturing a bomb, and some suspicions arose about the possibility that one of them was an *agent provocateur* paid by the police. In the end, three anarchists were sentenced to several years in prison, but were released before completing their sentences. Treated in the press as a political threat, the Walsall bomb plot helped reinforce negative public opinion against anarchists. For instance, after the trial, *The Times* stated “The offence with which the prisoners were charged is one of the most dastardly and wicked which it is possible to conceive. Like treason, it is aimed at the very heart of the State, but it is not designed to destroy the existing Government alone. It strikes at all Governments, and behind all Governments it strikes at those elementary social rights for the defence of which all forms and methods or civil rules exist. The crime of which the Walsall prisoners have been found guilty was not an isolated act... Hate, envy, the lust of plunder, and the lust of bloodshed are stamped on every line of the Anarchist literature read at Wasall” (Anonymous, 1892b).

The Greenwich Royal Observatory bomb was a more dramatic event, as it ended with the death of the man who had attacked the building. On 15 February 1894, a French anarchist, Martial Bourdin, was killed when the chemical explosives he was carrying detonated outside the Observatory. In fact, this was the only anarchist-inspired attack in Great Britain when *The Stolen Bacillus* was written (Bantman, 2013; Quail, 1978). Some authors found this story somewhat vague. Quail (1978) wrote “Presumably, therefore, both he [Bourdin] and his associates were known to the police. Yet the police were a little lackadaisical. Had they wished, they could have had the details of the case collated with other information on Bourdin and could have made raids the same night [...]. In any case the documents the police had were enough to give suggestive addresses. It can hardly have been a question of legal niceties—after the arrest of Deakin in London they had not waited for a warrant to raid the Walsall Socialist Club. Neither was it the case that the police had been lulled into a sense of false security by general Anarchist inactivity. Emile Henry’s bomb had exploded at the Café Terminus in Paris on 12 February 1894, i.e. three days before the accident at Greenwich, and the sensation was still at its height. Indeed the English press, already full of the deeds of Continental Anarchists, took the Greenwich explosion as a confirmation of its direst prediction of similar outrages in England. It was the main item of news for over a week and hysteria knew no bounds. It is a little surprising, then, that the police did not move until the night of the following day. This allowed the dead man’s fellow conspirators [...] to be warned by accounts of the explosion in the following morning’s papers” (Quail, 1978). Police searches the next day failed to find any trace of explosives in the Anarchist club, although a search of Bourdin’s home turned up a sample of sulfuric acid that could have been used to prepare the bomb, not a surprising finding. In the end, no accomplices were arrested. H.B. Samuels, one of the anarchists close to Bourdin and later suspected of being a police agent, apparently induced Bourdin to go to Greenwich instead of Epping Forest, where he initially wanted to go (Bevington, 1898).

Unlike their continental counterparts, British anarchists were not responsible for bomb attacks. Victorian society’s fear of bombings actually came from the Fenian dynamite campaign of 1881–1885. Irish nationalism was undoubtedly more dangerous than anarchism in the late nineteenth and early twentieth centuries. As Ó Donghaile (2010) stated, “Contrary to the claims, violent images and political scare stories fostered in many late 19th-century popular novels, it was printed propaganda, rather than dynamite, that was the chosen medium of British anarchists during the 1880s and 1890s.” Shpayer-Makov (1988) studied British public opinion when *The Stolen Bacillus* was written. She concluded that despite the lack of evidence of anarchist crimes in Britain, “the dominant view in the public media portrayed the individual anarchist as an unscrupulous criminal and the movement as conspiracy intent on unleashing revolutionary violence upon the world.” She also asserted that British public opinion was highly influenced by the explosions and murder attempts on the continent in the early 1890s, when anarchism had the greatest notoriety in the United Kingdom. The fear of similar activities taking place in their country led the newspapers to consider anarchists a social danger. Probably, the fact that some anarchists came from France or Italy did not help and also fomented the traditional distrust against foreigners (Shpayer-Makov, 1988). Discussing this point in relation to the anti-alien lobby that flourished at that time, she considered that the

newspapers' far-reaching manipulation of the stereotype of foreigners as responsible for any type of crime was instrumental in shaping public opinion of anarchists (Shpayer-Makov, 1988). In her words, "The anti-alien and anti-Anarchist sentiments fed upon one another. By employing the adjectives 'murderous,' 'Anarchist,' and 'alien' in conjunction, the conservative press helped identify these categories [...]. The conservative press sought to prove the undesirable nature of immigrants and thereby the wisdom of restriction by stressing the criminal tendencies of Anarchists alongside assertions that many immigrants were Anarchists" (Shpayer-Makov, 1988). The situation was further complicated by the fact that most immigrants to England in this period were Jews, and anti-Semitism was mixed with the hatred of immigrants and anarchists (Shpayer-Makov, 1988).

Wells was not the only writer to use the stereotypical anarchist in his works. In fact, as Shpayer-Makov (1988) noted, "There were a plethora of novels and short stories following a literary formula in which the principal character was an utterly unscrupulous, dangerous Anarchist." This practice is also evident, for example, in the Henry James novel *The Princess Casamassima* (1886) and has been analyzed in depth by Arnett-Melchiori (1985). However, probably the best-known examples are *The Dynamiter* (1885) by Robert Louis Stevenson and *The Secret Agent* (1907) by Joseph Conrad, where the main characters, Zero and the professor, respectively, are anarchists fascinated by bombs. These two works did not help improve the social reputation of anarchists in British society at that time. The Greenwich affair figured in Conrad's novel and is also mentioned in T.S. Eliot's poem *Animula*. Even decades later, this failed bomb attack vaguely inspired Alfred Hitchcock's film *Sabotage* (Quail, 1978).

Interestingly, during the 1880s, socialists shared some principles with anarchists, and socialists still held some sympathy for oppressed and ill-treated anarchists in the 1890s. Wells himself was interested in socialist ideas when he was a student in London, and a chapter of his memoirs is devoted to explaining this interest (Wells, 1934). However, the two groups' differences on theoretical and organizational issues contributed to their dissociation at this time, and by the mid-1890s anarchists were practically isolated. What is more, many socialists made a special point of distinguishing themselves from anarchists (Shpayer-Makov, 1988). The Walsall plot and the Greenwich Observatory bomb probably reinforced the divergence of the two groups.

## **2.2. Cholera epidemics and bacteriological discoveries**

Cholera had been endemic to India for centuries, but it did not spread to Europe until the nineteenth century. A major epidemic reached several Western European countries, including Germany and England, in 1832, and another pandemic saw several outbreaks between 1846 and 1862, when John Snow linked the disease to contaminated waters. A new pandemic affected Western Europe from 1864 to 1875. In this last outbreak, Robert Koch saw his first cholera patients (Brock, 1999). The rapid spread and the high mortality rate in those affected overawed the European population and also fazed the young Koch. At that time, widespread fear followed the appearance of each outbreak of the disease.

In the 1880s, Germans still recalled the Hamburg epidemic of 1866, and when the disease reappeared in Egypt, they placed Koch in charge of a commission to study the epidemics (Brock, 1999). Koch's team moved to Africa and reached Alexandria on 24 August 1883. They quickly started to gather samples from cholera victims, tried to culture the causal organism, and carried out inoculation studies in animals. They observed that patients affected by the disease all had a certain bacterium in their intestines. However, they were unable to find this bacterium in the blood, lungs, spleen, or liver. Still worse, any attempt to culture the organism was also unsuccessful. Koch sent a report describing their failed efforts to the German Minister of the Interior on 17 September 1883. He wondered if the bacterium he had observed in the intestine of cholera victims was the etiological agent of the disease. The report was translated and published in the *British Medical Journal*. This journal expressed its reluctance to accept Koch's suggestion: "It must be clearly borne in mind that Dr. Koch definitely states that he looks upon the experiments hitherto conducted as being merely of an initiatory character, and expressly states that it is not to be assumed that these micro-organisms are the

actual causes of the disease, and suggests that further observation may show that they are mere concomitants. For ourselves, judging from the evidence after a very careful perusal of the text, we are inclined to fall in with the latter view, and even to add that, thus far, sufficient data have not been adduced to warrant our assuming that a specific kind of micro-organism has been discovered in cholera..." (Anonymous, 1883a).

In the following days, as the cholera epidemic subsided, it became difficult to obtain specimens for study, so Koch moved his team to India, where the disease was still highly prevalent. A few days after their arrival in December 1883, Koch succeeded in obtaining a pure culture of the organism suspected of causing cholera (Mochmann & Kohler, 1983). He was now confident of the relationship between the bacterium and the disease; on 2 February 1884, he reported that the bacillus he had found in the intestine of cholera patients was indeed the cholera pathogen. Again the translation published in the *British Medical Journal* was followed by some critical comments concerning this possibility. "The only evidence adduced by Dr. Koch in support of the unqualified statement that the bacillus which he describes as present in cholera is the veritable cause of the disease, is the circumstance that the micro-organism has not been detected elsewhere. That this particular form of bacterium may be new... is ... by no means improbable; but it is quite possible that the evidence which Dr. Koch adduces in support of its being the cause of cholera may receive a wholly different interpretation at the hands of other observers" (Anonymous, 1884). This was not the only opinion against Koch's assumptions—Louis Pasteur and Max von Pettenkofer were also unconvinced. In the summer of 1884, a new epidemic of cholera broke out in France, and Koch was sent to study its development. He easily isolated the cholera bacilli from autopsied material and convinced the members of the French Cholera Commission of the etiological role of the bacilli in the disease. Finally, he delivered a lecture on his findings in a major conference entitled "Conference for the discussion of the cholera question," held in Berlin on 26 July 1884 (Koch, 1884). His theory was finally accepted by many prominent members of the scientific community, but not by all. On 6 August 1884, a British mission sailed for Calcutta to test Koch's findings. Their conclusions refuted Koch's thesis and dismissed the possibility that the disease was transmitted through drinking water (Howard-Jones, 1984).

How were the polemics about cholera etiology treated in contemporary British newspapers other than medical journals? The British press covered the news coming from Egypt, given British interest in the country, where they maintained an army of occupation. For example, on 9 August 1883, *The Times* published a record of recent cholera deaths: "The number of deaths from cholera during the last recorded period of 24 h was—at Cairo 78, at Ghirgeh 29, at Minieh 22, at Roda 21, at Benisouel 14, at Alexandria 13, at Tantah 13, at Kafrzayat 11, at Rosetta 11, and in the remainder of Egypt 442. In the army of occupation there were no deaths" (Anonymous, 1883b). News about Koch's reports was also reported over the next few years, for example, regarding the cholera outbreak in France during the very next year (Anonymous, 1884).

### 3. The literary context and the meaning of *The Stolen Bacillus*

#### 3.1. Previous fictional works on bioterrorism

Most critical literature analyzing Wells' literary work does not consider the influences that motivated him to write *The Stolen Bacillus*. One possible reason for this lack of attention is that, unlike his other early writings, this short story was an isolated foray into the field of microbiology. Yet, Wells' interest in the subject of bacteria was not limited to *The Stolen Bacillus*. Bacteria reappeared in *The War of the Worlds*, where they destroyed the Martians, and also in *The Extinction of Man* (Wells, 1894b), as the fourth cause that may terminate the reign of Man in the future (Philmus & Hughes, 1975). Regarding the historical importance of *The Stolen Bacillus*, Millner (2011) considers that, together with Jules Verne's *Le Docteur Ox* (1874), *The Stolen Bacillus and Other Incidents* (1894) contains the best examples of science fiction stories published in Europe in the nineteenth century, stressing the importance of Wells' work for this literary genre.

Hashimoto (2003) offers a possible explanation for the choice of cholera: “Now we may be able to see how effectively and originally Wells bound two correlating discourses about Anarchism and cholera in *The Stolen Bacillus*. It forms a textual knot by interweaving the adjacent discourses, as if there were two political diseases which commonly manipulated and amplified the xenophobia, particularly the nightmarish memory of an Asiatic horde. Anarchism had represented the political contamination from the continent, and Asiatic cholera recalled the triumph of anarchy. Actually, cholera and Anarchism were both menaces to the bourgeoisie: Anarchists’ bombs attacked the bourgeoisie, as did cholera carried by ‘filthy people.’” Hashimoto has also commented on other literary sources from authors that also considered the use of micro-organisms as biological weapons, such as Robert Louis Stevenson and Albert Robida.

Robert Louis Stevenson and Fanny van de Grift Stevenson wrote *The Dynamiter* in 1885. In this book, the anarchist narrator suggests the possibility of contaminating the sewage systems of British cities with typhoid bacilli.

The use of germs in warfare was also considered by Robert Potter in his work “The Germ Growers” (Potter, 1892). In this case, alien invaders try to lay waste to humankind using germ warfare. In fact, this is not an example of bioterrorism but the use of biological agents in a war of conquest (Ikin & McMullen, 2005).

The French writer Albert Robida (1848–1926) was an early science fiction pioneer, and he has even been considered its founding father (Willems, 1999). In the context of the present paper, he is especially interesting for a trilogy of futuristic works: *Le Vingtième Siècle* (1883), *La Guerre au vingtième siècle* (1887), and *La vie électrique* (1890). Set in twentieth century, *La Guerre au vingtième siècle* describes a conflict between Australia and Mozambique (Willems, 1999) featuring submarines, suffocating gases, warplanes, tanks, and other military weapons that were totally impracticable at the time. Although this novel was written in 1869, it remained unpublished until 1883, when it was included in number 200 of *La Caricature*, a magazine that Robida founded and edited for 12 years, and a new, probably better-known, version was published in 1887. The story also includes the use of biological weapons: “Un sous-officier le mit en faction dans une grande salle où le corps médical offensif, composé d’ingénieurs chimistes, médecins et apothicaires, discutait les dernières mesures à prendre pour faire éclater sous les pas de l’armée française douze mines chargées des miasmes concentrés et des microbes de la fièvre maligne, du farcin, de la dysenterie, de la rougeole, de l’odontalgie aiguë et autres maladies. Les mines étaient préparées, décaissons allaient emporter les obus de zinc chargés de miasmes et les boîtes à microbes nécessaires.” The literary value of Robida’s work derives mainly from his futuristic vision of the alliance of science and technology for military purposes. As Hendrick (1998) stated: “What was most modern about this novel was his premonition of the use of science by the military in the production of chemical and biological weapons. [...] Robida was alone in describing the enlistment of the sciences in the fictional creation of new weapons for the future. [...] Robida’s chemical and bacteriological weapons were much more realistic and accurate in their prediction of the future.” Richardson (2007) provides a detailed analysis of Robida’s fantasies about future warfare, pointing out that many of Robida’s ideas, including biological weapons, were subsequently developed. Willems (1999) remarks that “In his protagonists’ discussions of future forms of warfare, ambivalence is shown at the semantic level with a variety of such blackhumorous and oxymoronic terms as “la guerre médicale” (medical war) or “le Corps Médical Offensif” (the Medical Assault Corps), who are responsible for the production of poison gases and toxic ‘miasmas’ for use as bacteriological weapons.”

Although Robida was certainly one of the first fiction writers to include the use of biological weapons in future wars, it is debatable whether Wells drew on Robida’s works for *The Stolen Bacillus* (Hashimoto, 2003). However, Wells’ approach to using bacteria as a weapon of mass destruction and the general consideration of biological weapons is clearly different from Robida’s. Furthermore, there is no evidence that Wells had even read Robida’s work, let alone used it as an inspiration for his own works. In fact, Hashimoto’s (2003) comments refer to earlier comments by Hendrick (1998)

concerning other futuristic weapons that Wells included in his *The War of the Worlds*. No evidence can be found linking Robida's and Wells' works on biological weapons. Notwithstanding, there is no reason to reject outright a possible influence of Robida's book on Wells' story.

These earlier references to the use of germs with homicidal purposes have been used to accuse Wells of plagiarism, as he might have used these ideas in *The Stolen Bacillus* (Racknem, 1964). However, this seems unfair. Perhaps, he used the ideas in these works, especially *The Dynamiter*, as inspiration, but a detailed explanation of how to use germs for bioterrorism is completely developed only in Wells' work. We agree with Hashimoto's (2003) statement that "It is Wells's achievement to appropriate the unconscious conception underneath the texts and articulate most effectively the bacteriological weapon."

### 3.2. On the meaning of *The Stolen Bacillus*

Wells published the short story *The Stolen Bacillus* in the *Pall Mall Budget* on 21 June 1894 (Wells, 1894a), and it is the first work of fiction to which he signed his own name. Until then, Wells had published anonymously or under a pseudonym. This story was later included in a volume with fourteen other stories (Wells, 1895), as well as in *The Country of the Blind and Other Stories* (Wells, 1911). In his autobiography (Wells, 1934), Wells explained why he wrote this story. He described a meeting with Lewis Hind, who was the editor of the *Pall Mall Budget* and was in charge of finding new "features" for the journal (Hammond, 1979). Hind had read Wells' *Man of the Year* and was interested in having more stories from him (Wells, 1934): "There he broadened the idea of utilizing my special knowledge of science in the expanded weekly [the *Pall Mall Budget*], in a series of short stories to be called "single sitting" stories. I was to have five guineas for each story. It seemed quite good pay, then, and I set my mind to imagining possible stories of the kind he demanded. [...] The first of the single sitting stories I ground out was *The Stolen Bacillus* and, after a time, I became quite dexterous in evolving incidents and anecdotes from little possibilities of a scientific or a quasi-scientific sort." Wells answered Hind's invitation by sending him *The Stolen Bacillus* (Cox, 1991). This story has been considered the first literary description of bioterrorism (Monegato, 2009/2010).

In *The Stolen Bacillus*, a bacteriologist shows a mysterious visitor the cholera bacillus through a microscope. The visitor seems especially interested in the germs' ability to "devastate a city." The bacteriologist also explains that he has living organisms in some tubes. He is really flattered by the visitor's interest and continues to try to impress him: "Here is the pestilence imprisoned. Only break such a little tube as this into a supply of drinking-water, say to these minute particles of life that one must needs stain and examine with the highest powers of the microscope even to see, and that one can neither smell nor taste—say to them, 'Go forth, increase and multiply, and replenish the cisterns,' and death—mysterious, untraceable death, death swift and terrible, death full of pain and indignity—would be released upon the city, and go hither and thither seeking his victims. [...] Once start him at the water supply, and before we could ring him in, and catch him again, he would have decimated the metropolis." The bacteriologist's discourse impresses the visitor, who says: "These Anarchist—rascals, ..., are fools, blind fools—to use bombs when this kind of thing is attainable." Then the bacteriologist is called out of the room; when he returns, the visitor takes his leave. After his departure, the bacteriologist muses on his visitor's ethnicity and discovers that the tube he has shown the visitor has disappeared. He suspects that the visitor has stolen it and runs out to find him. He takes a cab and is followed by his wife in another cab. Meanwhile, the visitor's mind is racing about the awful consequences of putting the tube contents in the water supply. Wells is interested in conveying to the readers that the visitor portrays himself as an anarchist and boasts that his notoriety will surpass that of Ravachol and Vaillant, two well-known French anarchists. However, he discovers that the bacteriologist is following him, and fearing that he will be caught and his plan aborted, he offers the driver a reward if they can escape. The acceleration of the cab causes the anarchist to lose his balance, and the tube breaks onto his apron. He decides to drink the last drop from the broken vial to make sure that he can transmit the disease. He stops in the middle of the street and, when the bacteriologist meets him, he laughs and says: "Vive l'Anarchie! You are too late, my friend. I have drunk it. The cholera is abroad!" Then, he moves to the Waterloo Bridge while rubbing his body

against many people as possible. The bacteriologist watches the anarchist run away and explains to his wife that, in fact, the tube contains no cholera germs—only a harmless new species of bacterium he is working with that causes blue patches in animals. Thus, there is no danger to the city. The story does, however, show the possibility of bioterrorism, and, at the same time, the difficulties involved in carrying it out. The “weaponization” of germs is difficult even in modern times. Wells chose to deprive the anarchist of the possibility of poisoning the water supply by having the vial break. Even when other explanations of this fact may be considered, as a satire of the main characters, this also illustrates the practical difficulties of conveying germs to targets in terrorist attacks. Special care should be taken in these situations and technical ability is needed to use this weapon in the best way. To conduct a terrorist act, such as the poisoning of public water with germs, the wish is not enough. A detailed knowledge of the number of bacteria to be put in the water, and which would be the best of them for the criminal purpose, are also needed. This is not a traditional bomb; it is something more sophisticated that cannot be used by anybody who wishes to kill people. Wells’ work can also be read in this way.

Why did Wells choose anarchists and the cholera bacillus as the main threats in this story? Wells’ education coincided with the advent of medical microbiology, when micro-organisms were first clearly identified as the cause of the most prevalent diseases in his time. In 1884, when he was 17 years old, Wells entered the Normal School of Science. Although his autobiography makes no mention of cholera epidemics or Koch’s discoveries, it is safe to assume that Wells was aware of them and that they were probably discussed at the School. Several reasons may explain why Wells chose cholera in his short story. First, the epidemic outbreaks in Great Britain in the previous decades and the number of people afflicted gave cholera the reputation of a dreadful disease among Londoners. In 1831, an important outbreak appeared in England and an 18-year-old apprentice, John Snow, was sent to help a Newcastle surgeon to help the victims (Golub, 1997). This experience had a profound effect on the young Snow and motivated a lifelong interest in the disease. He developed a theory that went against the accepted explanations of the time. He proposed that cholera, being an intestinal disease, may be linked to bowel discharges, and that contagion may be due to the ingestion of food or water contaminated by feces. When cholera returned in 1853, Snow’s studies on the water supply of the city allowed him to establish the focus of the disease in a specific source of water. After access to this water was prevented, the number of cholera cases decreased dramatically, and the link between water and disease became definitely established. Snow became a kind of hero and an important scientist at this time. All of this might have inspired Wells when he needed to find an awful disease to be used as a weapon by the anarchist in his story.

Besides cholera, the other villain in the story is the anarchist. And this raises a second question: Why did Wells use a French anarchist in his short novel instead of Fenians, for example? As far as we know, Wells himself gave no written explanation for this choice, and his autobiography contains no clues for this choice. Therefore, we can only speculate about his reasons for using such a character in his short story. British public opinion held that anarchists wanted to destroy society, and, as recent events in Europe showed, were capable of murdering many people with bombs, although, this had not occurred in Great Britain. As mentioned above, anarchists were associated with aliens, and, in fact, some of them came from continental Europe. The Greenwich bomb was probably the reason Wells chose to associate the anarchist with French by having him cry out “Vive l’Anarchie.” Perhaps Wells was merely following the stereotype of his day in this story. On the other hand, as Hashimoto (2003) pointed out, this expression was in common use in anarchist magazines, so the possibility of the anarchist being British and using these French words cannot be ruled out. However, the bacteriologist’s ruminations about “the ethnology of the visitor” might indicate that the anarchist was, in fact, an alien. French, then? Hashimoto (2003) also pointed out that two bombings took place in Paris a few months before Wells wrote the story, and these events might have influenced Wells’ decision to use the anarchists instead of the Fenians. Another explanation may be found in the words of the anarchist when he compares himself with Ravachol and Vaillant. François Claudius Koëningstein, better known as Ravachol, was a famous French anarchist who was guillotined in 1892 for several bombings he had carried out in previous years. He soon became a romanticized symbol of desperate

revolt and was very popular at the time. Auguste Vaillant was a French anarchist who was guillotined in 1894 after bombing the French Chamber of Deputies in revenge for Ravachol's execution. Donghaile (2011) explored Wells' literary relationship with anarchism, noting that Wells dealt with anarchists in several works, such as *The Invisible Man*, "The Diamond Maker," and *The Stolen Bacillus*. Donghaile considers *The Stolen Bacillus* as an example of the parodies of radicalism that "were common during the late Victorian and Edwardian periods, and with this story Wells pandered to the popular construction of Anarchism as morbid irrationality." By contrast, late nineteenth-century British society considered the Irish nationalists in a very different light. Donghaile (2011) quoted Savage (1894) to show this distinction. "[He] distinguished Anarchism from Irish nationalism by portraying it as a politically unreadable phenomenon. Focusing on its foreignness, he blamed the 'fleeing scoundrels' of Europe for radicalizing American industrial workers, provoking riots and masterminding strikes across the modern industrialized world. [...] In contrast to militant Irish republicans, late nineteenth-century Anarchists seemed completely pathological in the eyes of contemporary conservatives and, as a result, their perceived heinousness earned them a special place in the right-wing imagination." Although at the time that the story was written Wells was interested in the socialism of the Fabian Society, he was probably also influenced by the bad image many British had of anarchists. As Donghaile (2011) wrote: "Anarchists were associated with the enduring popular image of the bomb-throwing and knife-wielding terrorist. This popular perception was magnified and proliferated on an international scale as a result of the attacks carried out by European and American Anarchists during the 1880s and 1890s, when cafés and theaters were bombed, heads of state assassinated and attempts made on the lives of industrialists and financiers." The newspapers included detailed accounts of such events; for instance, on 5 February 1894, *The Times* wrote "Maitre Labori, the eloquent defender of Vaillant, called yesterday morning upon M. Carnot to make a final appeal for mercy, but late in the afternoon the President gave the inevitable order, and in the early hours of this morning this latest apostle of Anarchy was guillotined." This article followed several detailed chronicles of Vaillant's trial. These might have influenced Wells' choice of terrorist for his story.

The figure of the anarchist in Wells' story does not arouse sympathy. Donghaile (2011) considered that *The Stolen Bacillus* is "a satire on revolutionary individualism; the titular bacillus, supposedly a cholera culture, is shown to an Anarchist who plans to use it to infect London's water supply but the terrorist's true motivation is his competitive desire to outdo his comrades." In fact, the anarchist expresses contempt for his comrades, referring to them as "rascals" and "blind fools" in his conversation with the bacteriologist, and he aims to be more infamous than Ravacol and Vaillant. In some way, Wells considered anarchism as a "morbid irrationality" (Donghaile, 2011), and his opinion did not improve as is evident in other works such as "The Diamond Maker" and "The Invisible Man."

Why has *The Stolen Bacillus* not received more attention from the academics? It is difficult to say, but Hashimoto (2003) suggested that its appearance in a book between *The Time Machine* and *The Island of Doctor Moreau* had thrown it into the shadows. We believe that Wells' story deserves more recognition, as it is the first description of elements interested in eliminating the social order attempting to use recent scientific discoveries for murderous purposes. Whereas nineteenth-century developments in chemistry paved the way for the use of poisonous gases during the World War I, the use of biological agents had to wait until the 1930s. Nineteenth-century anarchists can be compared with today's terrorists, just as Victorian society's fear of being attacked at any time can be compared with the fears in modern society. However, whereas the possibility of these agents being used in Wells' day was remote, it now seems more likely. Wells' story remains interesting because it considers how scientific discoveries may be used not only for society, but also against it. It also shows the need for reflection on how contemporary societies view some groups (anarchists in the past, radical Muslims in the present) and how murderous acts may preclude society's attempts to understand their ideology.

Wells also foreshadowed the interest of bacteriology in fiction plots. More contemporary authors, such as Robin Cook, have used micro-organisms in their works. In *Vector* (Cook, 1999), a bioterrorist attack using anthrax spores and the botulinum toxin takes place in the United States. In a

preliminary note, the author stated that such a possibility might soon be real. Only two years later, five people died after inhaling anthrax spores (Adam & Stefan, 2002). More than a hundred years earlier, Wells had suggested, prophetically, the possibility of such an attack. This was the plot of *The Stolen Bacillus*.

#### 4. Conclusions

This article has reviewed this short story of Wells on bioterrorism. We have included several contextual analyses to permit a better understanding of the circumstances that inspired the author. We would like to emphasize two of them, the beliefs of Victorian society on terrorism and the discovery of the etiology of cholera epidemics. The first was also discussed by Hashimoto (2003), especially in those aspects considering the Victorian beliefs on terrorist attacks and the importance of the Greenwich explosion in some works of the time. We have also considered this analysis in our paper, as well as some extended comments on the romances written on the use of biological agents in war and terrorism attacks. The importance of cholera as an inspiration in the Wells' work has been considered in its historical context rather than as a metaphor (Hashimoto, 2003). We consider that our work helps to a better understanding of the story, as it deepens the knowledge on the bacteriologist and the cholera's choice, as well as the anarchist character.

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