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Chagas Disease. The illnes of poverty, *Houses of Fire* (1995)

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Summary

Chagas disease is transmitted by a parasite through the bite of an insect or by means of infected blood. Worldwide, there are some 20,000,000 people with illness and 100,000,000 more are considered to be at risk of contracting the disease because they live in areas where the parasite is endemic. Despite these astronomical figures, Chagas disease belong to the groups of so-called "forgotten illnesses" owing to the scant attention paid them by the pharmaceutical industry as regards the development of new products for their treatment.

The reason why the disease has been forgotten can be glimpsed simply by looking at the poverty map of America. This coexistence of poverty and the disease is due to the vector insect's habit of living in straw roofs and cracks in walls of the population's precarious houses. This means that one way of eradicating the disease would be to destroy its habitat, burning those buildings and replacing them with more solid and hygienic dwellings. Hence the name of the film: *Houses of fire*.

The film tells us how after learning of the investigations of Carlos Chagas in Brazil the Argentinean doctor Salvador Mazza begins his research by attempting to fill in the missing gaps in the disease, and the movie posits the unflagging struggle of a Public Health Worker, who is interested in saving the lives of those with no name, no face and no culture, to achieve the necessary funds and support from a hypocritical political society and an uninterested scientific community.

Keywords: Salvador Mazza, Chagas disease, *Trypanosoma cruzi*, *Triatoma infestans* , Chagas cardiomyopathy.

Technical details

Title: *Houses of Fire*
Original Title: *Casas de fuego*
Country: Argentina
Year: 1995
Director: Juan Bautista Stagnaro
Music: Luis María Serra
Screenwriter: Juan Bautista Stagnaro
Cast: Miguel Ángel Solá, Pastora Vega, Harry Havilio, José Luis Alfonzo, María Lorenzutti, Humberto Serrano, Carolina Fal, Alfa Bidondo and Álex Benn.
Color: Color
Runtime: 115 minutes
Genre: Drama, Biographical, Biopic
Production Companies: Instituto Nacional de Cine y Artes Visuales, Juan Bautista Stagnaro and Aleph Producciones.
Awards and nominations: Festival Internacional del Nuevo Cine Latinoamericano, La Habana (Cuba) 1995, special prize from the jury. Festival Internacional de Shangai (China) 1995, special prize from the jury. Festival de Cine de Gramado (Brazil) 1995, nominated best film. XX Festival de Cine Latino-americano in Trieste (Italy) 1995, nominated best film. Festival internacional de Cuzco (Perú) 1995, best film. Festival de Cine Iberoamericano of Huelva (España) 1995, special award by the jury . Cóndor de Plata Prizes 1995 of the Association of Argentinean chroniclers for the best national film, director and original script.
Synopsis: The film is based on the life and research work on Chagas disease of the Argentinean physician Salvador Mazza.

Background

The film has two main "characters" -Dr. Salvador Mazza (figure 1) and Chagas disease- and it deals with the crossed history of both within the context of the start of the century in a country undergoing huge expansion but disharmonious and unjust, with rampant social inequality across its vast territory. On one hand, there are the doctors, who train in Buenos Aires or in Córdoba, two very rich and cultured cities, who can afford to go to Europe to complete their studies and occupy a prominent niche in society. On the other, we see the millions of people cast out from cities and the availability of health centres: i.e., condemned a predestined and inevitably fatal existence. These are people who live amidst poverty and squalor, where insects and rodents are the order of the day, in zones where several endemic diseases have coexisted and indeed continue to do so. Among them, owing to its dark insidiousness is the most terrible al all: Chagas disease.

Figure 1: Doctor Carlos Chagas

Together with another four, *Mèdecins Sans Frontiérs* have included the illness in a group that they call "the forgotten illnesses", characterised by exhibiting the following particularities: they are mainly present in developing countries and affect millions of people and yet despite this they have largely been overlooked by the pharmaceutical industry because treatment is expensive, inefficient or inexistent. The result of this is that current treatments for Chagas disease are only effective in the acute and asymptomatic phase and in children under 15, and there is no treatment for chronic Chagas disease in adults. A bite that may have passed unnoticed in childhood may mean that 20 or 40 years after the parasite has been inoculated it can damage the heart or other important organs, causing sufferers irreversible harm and preventing them from living a normal life[1] and even leading to host death. It therefore resembles a kind of childhood curse on the poor, from which they can never escape[2].

The name of the disease comes from that of Dr. Carlos Chagas (figure 2), a famous Brazilian researcher who inverted the conventional process of investigation, since for the first time in the history of research the parasite was found before the disease it causes had been elucidated[3]. When Dr. Chagas was sent to work in the State of Minas Gerais in 1908, amidst feverish activity and working from an old railway wagon converted into a laboratory, he became interested in the excreta of certain insects (triatomines) found in countless precarious dwellings, that during the night silently attack their inhabitants, then disappearing with the light of day, making them very difficult to capture. Upon studying their excrement he observed the presence of protozoa that he identified as belonging to the genus *Trypanosoma*, of which some species were known in other parts of the world. He called the new species *Trypanosoma cruzi*, in honour of Oswaldo Cruz, his mentor and a great epidemiologist.

Figure 2: Doctor Mazza

After studying the life cycle of the *Trypanosoma* in laboratory animals, Dr. Chagas investigated the presence of the parasite in people who lived in dwellings infested with triatomines, and in 1908 he uncovered the first case of trypanosomiasis in a two-year old girl who was running a high fever, and had hepatomegaly, spleenomegaly, and adenopathies. The swelling of the child's face and of that of other later patients alerted him to the fact that the parasite altered the thyroid gland, producing hypothyroidism and, in extreme cases, cretinism (figure 3). This clinical mistake was a key argument for many who rejected his findings and, since only 5% of those bitten by the insect show symptoms in the acute phase, the importance of his findings dwindled. After Dr. Mazza's

study, it became apparent that the harm to the population was much greater than Chagas himself and his peers had ever imagined.

Thus, in 1912, when Chagas presented the disease he had discovered and the results of his studies in Brazil to the scientific community of Buenos Aires, academics heatedly rebutted the relationship between the parasite and hypothyroidism that he was proposing, and because of this description of the symptoms of the disease, partially mistaken, his evidence fell into discredit and the Argentinean scientific circles insisted that the presence of the parasite in the blood was a casual finding and did not necessarily represent a true illness.

Figure 3: Acute Chagas disease and Romaña's sign

However, Dr. Mazza did not remain indifferent to Dr. Chagas' research and decided to further investigate the situation, and the two doctors thus maintained a passionate exchange of letters in which both expressed mutual admiration for each other. Dr. Carlos Chagas was a great microbiologist who unfortunately died very young, at 55, of a massive heart attack. He received no international recognition for his work, which should have reaped much greater rewards[4]. The disease and his research were only truly recognised as they should have been in the scientific world when Dr. Mazza began to publish his data.

Dr. Salvador Mazza graduated in Buenos Aires in 1910. In 1916 the army sent him to train as a research scientist in infectious diseases in Germany, Austria and Hungary in the middle of the First World War. Upon his return in 1920, he was nominated Director of the Central Laboratory of the *Hospital Nacional de Clínica*, and was awarded a Chair in bacteriology[5].

Taking into account all the possibilities of performing his work in the best centres of his country and abroad, in 1923, after a trip he had made with his wife, he went to France to start a second round of training. He then travelled to Tunisia, where he met Dr. Charles Nicolle. Nicolle was a famous French doctor who was Director of the Pasteur Institute of that French colony and who went on to become one of the finest doctors in France and a member of the French Academy of Medicine and Sciences. He was awarded the Nobel Prize for Medicine in 1928.

Both the scientific acumen and the humanitarian culture of Dr. Charles Nicolle captivated Mazza, who always saw him as the spiritual father of all his work. After a year and a half of travelling around North Africa, Mazza returned to Buenos Aires and was designated Chief of the Laboratory and Museum of the Institute of Clinical Surgery and he began to plan a trip to visit Nicolle in Buenos Aires, which he finally managed in 1925.

On realising the situation of abject helplessness of the doctors faced with severe endemic diseases in the interior of the country, the French doctor decided to support Dr. Mazza in the project he had been planning for some time: i.e., the creation of an institute that would be dedicated to the diagnosis and study of diseases in the region. Thus, with the support of Nicolle, Dr. Mazza organised the first Scientific Society of Juyjuy, an entity devoted to the study of diseases typical of the region and one that was soon to have branches in most of the provinces of the north, west and east of Argentina. With this impetus and help from the School of Medicine, 1928 saw the creation of the *Mision de Estudios de Patología Regional Argentina* (MEPRA), whose first Director was Dr. Mazza.

The MEPRA organised an itinerary through the interior of the country with the aim of attracting and capturing physicians from all four points of the compass. It had a multidisciplinary team, able to handle all human and animal diseases in the various regions, performing a broad range of services in the fields of therapeutic research and teaching.. Mazza also managed to marshal and deploy a converted railway wagon and a free pass to travel in it throughout the country. With this travelling laboratory and consulting service that he himself designed, he travelled through many regions of the country and even as far as Bolivia, Brazil and Chile.

He also returned to the studies, earlier relegated

by the Brazilian scientific community to oblivion, that Carlos Chagas had carried out on the illness caused by *Trypanosoma cruzi*.

His return to Chagas' studies occurred when Mazza related patients with a condition that was very common in the northeast of Argentina, characterised by symptoms of chronic fatigue and possibly fatal heart disease, to the fact that during their early years they had been exposed to the bite of an insect similar to cockroaches, known in Argentina as "*vinchucas*" (figure 4). With great care he managed to demonstrate a thousand cases of the disease, discovering the presence of *Trypanosoma* in the hearts of his patients[6].

Figure 4: *Triatoma infestans*, known in Argentina as vinchuca

The pioneering discoveries of Dr. Chagas, together with the later investigations of Dr. Mazza, complete the tapestry of this terrible illness. Dr. Mazza not only uncovered the interrelationship between the microbe and heart disease but also highlighted its huge health importance, reported its clinical presentations, and alerted other physicians to its diagnosis. The film portrays the process of this research and the struggle of this extraordinary man against the political and scientific communities.

The plot

The action of the film takes place in northwest Argentina in the twenties. Dr. Mazza (Miguel Angel Solá) (figure 5), a renowned scientist, decides to travel to Juyjuy with his wife (Pastora Vega) (figure 6) and a team of colleagues to carry out studies on the infectious diseases prevalent in the region. After a lot of hard work, thanks to the aid and support of Dr. Arce, he is appointed Director of the *Mision de Estudios de Patología Regional Argentina* (MEPRA), created officially in 1928, where he begins his most important investigations.

Figure 5: Doctor Mazza, interpreted by Miguel Ángel Solá

Figure 6: Doctor Mazza with his wife on the way to Jujuy

Dr. Salvador Mazza, who is intimately linked to teaching at the renowned University of Buenos Aires, is presented to us as a professional and obsessive transgressor, who insists on continuing with the research carried out by Dr. Chagas in Brazil. This latter had posited the existence of an insect related to a set of symptoms also seen in the inhabitants of northern Argentina that he tried to link to the cause of large numbers of deaths in the region due to heart problems (figure 7). The film portrays the lively and passionate character of Dr. Mazza, interweaving scenes of his married life into the plot. It also tries to show that although this illness affects the poor almost exclusively, nobody is immune, as we see in the death of a colleague: a death that affects Dr. Mazza very profoundly (figure 8).

Based on a single event that encapsulates the feelings of his colleagues about these new medical notions, Dr. Mazza decides to resign from his position at the University and make use of his contacts to develop an important research project out in the field.

The story focuses the conflicts brought about by the different interests that either oppose or support an advance in the discoveries of Dr. Mazza, who is finally abandoned by the scientific community to which he formerly belonged. In one scene, we see how on taking down a picture with a religious image at a ranch there are hundreds of *vinchucas* behind it. With this, the aim of the film is to portray the opposition between religion and science, a religion that was insufficient to protect the poor from this plague.

Figure 7: Autopsy of someone who died of Chagas-due cardiopathy

An underlying theme throughout the film has to do with the hegemonic power of the Church, the hypocritical society of the times, and the tradition of the positivist medical discourse, which did not acknowledge a disease linked to socio-economic causes to an endemic plague. It shows how an investigator has much more to fight for apart from his or her academic duties[7].

Figure 8: One of Dr. Mazza's colleagues dies of an acute heart attack

In his travels through rural areas, curing and educating the inhabitants, Dr. Mazza sees for himself the miserable conditions of the native population and observes how their adobe dwelling are the most important source of transmission of the disease (figure 9). Through the MEPRA he manages to acquire a railway wagon and a free pass to travel where he wishes in the country. The wagon is equipped with a well-stocked laboratory and consultancy, and the scientific discoveries he makes eventually earn international renown.

Figure 9: Vinchucas, at night, in a ranch house

When Mazza confirms the link between the disease and poverty, among other actions, according to the film, he proposes the burning of the houses to eradicate Chagas disease. Thanks to his efforts and perseverance and the support of faithful colleagues who are proud to have collaborated with him, Mazza manages to gather sufficient information and proof to convince people to accept the validity of all the theories first proposed by Dr. Chagas and later further explored by him. He ends by receiving the acclaim of those who had formerly repudiated him.

Characteristics of the film

The film is supposed to be biographic, although it claims to be a free version. This short proviso allowed the makers to introduce a fictional element. In any case, in general there are no historical films (known as biopics) that match reality perfectly and hence the missing gaps where information is lacking must be filled in. Using this type of film as a teaching resource has certain advantages but it also generates problems.

The positive traits are that the film allows us to see the historical and social context within which

events developed, especially in view of an excellent photography, an appropriate handling of the wardrobe, and the fact that a specialist was used to recreate the conditions of the period. It is these elements that allow spectators to understand the severity of the situation and the importance of the discovery made at that particular time and in that particular region, where the ruling class, people's interests, the social framework, scientific knowledge and available resources were completely different.

On the other hand, however, since they based themselves on the figure of an important person, the directors were evidently tempted to magnify some aspects of his personality or efforts to make them more impacting. In this search for the dramatic, the characters and situations become polarised and inevitably split things into the bad and the hypocritical and the good and the truthful; i.e., the main character and his friends. Nevertheless, to understand the different stances it is also necessary to see them in the light of the state of knowledge and customs of the times.

Both aspects -the heads and tails of the issue- are seen in the film, which on one hand is extremely useful for portraying the struggle of a researcher, above all a Public Health Worker, who for the first time took the laboratory out into the world where the problems really were, and really met the people and their circumstances at a time when everything revolved around distant Buenos Aires, the neuralgic core of science of the country. This has not changed, so what Salvador Mazza managed to do so long ago is really an astounding revolution in health practices; the founding of an institution with a branch in the north of the country, where the disease was most prevalent. Currently, the centre for studies of the illness -The "Dr. Mario Fatala Chaben" *Instituto Nacional de Diagnóstico e Investigación de la Enfermedad de Chagas*- is located in Buenos Aires, the place with the fewest cases, although of course there are different branches at other sites, but none of this calibre.

The task of requesting funds to be able to transmit the knowledge and expertise from Buenos Aires to where the problem lies would be a difficult problem even today. To fully appreciate this, let us consider the incredible differences there used to be between the north of Argentina and the capital city, taking any indicator as a basis. According to official data for the province of Juyjuy, where the story begins, more than 40% of the population today do not have their basic needs supplied and there are areas where the people must travel by mule -sometimes for more than 20 hours, to reach the nearest health clinic. The situation was surely much, much worse in the times of Dr. Chagas, since we are talking in terms of a distance of 1,600 km from the capital city and communications then were almost inexistent. The only possibility of travel was by the trains that transported the rich minerals of the north to urban areas. Hence the idea of using a converted railway wagon to attend to the poor along the same tracks that the rich used to get richer. In contrast, our hero only wished to give his patients a modicum of health and hope.

Salvador Mazza, who had a comfortable well paid position in the capital, a position that allowed him to travel to some of the world's best institutions in his field, where he was able to engage in a meeting of the minds with the best scientists of the time, preferred to leave his commodious life and go with his team to where things were happening, bringing his knowledge to other people and visiting the most distant regions of the vast territory of Argentina by train, paying no heed to the risk to himself and his team of contracting any infectious disease.

Nevertheless, in a film it is sometimes difficult to portray the glory of certain efforts and, for the dramatic element, the story must be packed out with certain fictional elements to aggrandise the images of the scene and create a more passionate atmosphere. This is difficult to accept as regards the people whose turn it was to live in those terms, as may be seen in a Letter to the Editor sent in 1997 to the *Revista da Sociedade Brasileira de Medicina Tropical* by Dr. Miguel Eduardo Jörg, a faithful witness to many of the events portrayed in the film. Dr Jörg worked under the supervision of Dr. Mazza as head of laboratory for 14 years. Currently, he is an academic and member of the Permanent Committee of the Argentinean Society of Cardiology for the History of Chagas Disease.

In that letter, Dr. Miguel Eduardo Jörg expressed his anger, which would have been justified in someone who had undergone many of the experiences recounted in the film, in these (translated) words: *"the film has been based on falsehoods, on people who never really existed, on unreal scenarios, on a deformation of events and minor participants, giving the spectator pseudo-passionate colours and twisting the matrimonial circumstances of the character"*[8].

Although not disregarding Dr. Jörg's negative views, we should recall that such "lapses" are quite

common in films and could even be sanctioned in the sense that a film is not a scientific or historical document and there is no reason to demand that it should be. The cinema is an art form and is therefore able to create realities aimed at portraying the main ideas in which the Director is interested, and it is logical to allow it a certain license if a film can be made more interesting. The passion of Dr. Mazza in all his activities was transferred metaphorically to his personal life, and perhaps owing to a wish to break with the stereotyped investigator, divorced from people's feelings, the Director went to the extremity of showing Dr. Mazza almost as a mythical seducer. In any case, this aspect is not that important in the issue.

What is interesting in Dr. Jörg's letter is his comment about the title of the film. It is true that no one would dare, either then or now, to burn the people's houses because they would never get anywhere else to live, and indeed what used to be done was that the houses were merely disinfected. Since the *vinchucas* in a house would only attack the people living in it, with no great risk of dissemination, the houses were never burned and according to the author of the letter this situation (house-burning) only occurred once during an outbreak of bubonic plague in the north of the country, which demanded such measures but for different epidemiological reasons.

In any case, the film realistically symbolizes what should really be done if the aim were to eradicate the disease from the poorest zones of South America: the inhabitants should be given new dwellings, with good quality materials, and should be able to escape their squalid huts for ever. "Burn the houses" is a phrase that refers to putting a final end to such injustice and changing the living standards of the inhabitants for once and for all, not merely disinfecting the houses once a year and nonchalantly adopting a "business as usual" attitude.

That is the huge challenge and the great drawback of this disease, which until now has received no attention from the large companies of developed countries, who have failed to support local investigators[9], but one which has now begun to be a problem, even for them. This can be seen in a documentary film recently shown in several countries of the world thanks to the support of Médcins Sans Frontières. Its title is *Chagas: un mal Escondido/Chagas-A Hidden Affliction* (figure 10) and its Director, Ricardo Prevé, an Argentinean born in the endemic zone and currently residing in the US, made it to show the world the risks of this disease, since it has no frontiers.

In this movie, which lasts 115 minutes, we learn of the story of patients with Chagas disease both inside and outside South America, in a developed world that fails to respond to the issues and hence does not know how to deal with them. If the patients are not attended to in childhood, the disease may degenerate into fatal heart disease, and the inhabitants cannot even protect themselves since they accept blood transfusions from others with no screening, a practice that should be mandatory in such territories[10]. In this globalised world, with no frontiers and strong immigration, both legal and illegal[11], it would be suicide to live blindfolded and simply believe that some diseases only affect others; that others should be left to worry about them, because they will never by *my* problems. The wellbeing of the rest of the world should underpin our best preventive measures.

Figure 10: Image from the film *Chagas-A Hidden Affliction*

The situation caused by this disease of the poor and the reason why it has consistently been ignored were adroitly expressed in a text that Carlos Chagas wrote so long ago: "*There is a nefarious purpose behind the study of trypanosomiasis. Each study points a finger at a population that is poorly nourished, that lives in inhuman conditions; it points at an economic and social problem that causes governors tremendous sorrow since it is testimony to their inability to solve an incommensurable problem [….] If you speak of the disease you will turn governments against you*"[12].

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