

Searching for the Origins of AIDS

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The question of the origin of AIDS has given rise to a wealth of studies. Moving away from conspiracy theories or culturalist readings, Guillaume Lachenal shows that the key issue is retracing the colonial, epidemiological, and sexual context that fostered the propagation of the virus rather than identifying a specific cause.

Based on the following books:

Jacques Pépin, *The Origins of AIDS* (Cambridge: Cambridge University Press, 2011);

Craig Timberg and Daniel Halperin, *Tinderbox: How the West Sparked the AIDS Epidemic and How the World can Finally Overcome it* (New York: Penguin Press, 2012);

Nathan Wolfe, *The Viral Storm. The Dawn of a New Pandemic Age* (New York: Times Books, 2011).

In 1999, a strange book came out entitled *The River*. It was a long, 1000-page investigation by British journalist Ed Hooper ascribing the ‘origin of AIDS’ to experiments with oral vaccinations against polio in the Belgian Congo in the late 1950s.¹ Fifteen years later, the book remains intriguing even though today its main hypothesis – the fact that the HIV crossed over to humans through vaccines contaminated by a simian virus derived from the chimpanzee renal cells used to prepare them – has been overwhelmingly invalidated. As historian Roy Porter pointed out in his review of the book for the *London Review of Books*, it interweaves three narrative strands, three separate books in fact.² The first is an educational demonstration, presenting the arguments supporting his theory. The second is more strictly historical, and the part that has best stood the test of time fifteen years later. It is a study of the history of medicine in the 1950s, a period of fierce optimism during which the African colonies enjoyed unprecedented financial and technical means and became veritable laboratories for medical science. Hooper explains that this was partly the backdrop for a race between the greatest scientific institutions in the world to develop a polio vaccine. The third, which intrigued Roy Porter the most, was an account of the investigation itself, showing Ed Hooper conducting his research, knocking on the doors of suspicious, conveniently forgetful, or lying scientists, chasing them down in their holiday homes, before travelling up the Congo river himself towards ‘the sources of HIV’. ‘The River might equally well have been called the Obsession’, concluded Roy Porter. ‘Something drove the virus-hunters [of the 1950s] to their triumphs and the ghastly nemesis. Was it the same demon that drove Hooper on his quest for the source of Aids, that modern caput Nili?’³ A history of two intersecting obsessions, *The River* was a journey into ‘the heart of darkness’, to coin that oft-used phrase, of science, Africa, and AIDS. The reference to Conrad’s novella was inevitable: researchers

¹ Edward Hooper, *The River: A Journey to the Source of HIV and AIDS*, 1st edn. (Boston, MA: Little Brown and Co., 1999).

² Roy Porter, ‘Tissue Wars’, *The London Review of Books*, Vol. 22 No. 5 · 2 March 2000, p. 34-35.

³ Ibid.

in the field even whisper that Hooper, bitter about the just (and unjust) criticism that followed his book, has gone mad.

Books expounding theories

There is no Colonel Kurtz and no sign of obsession in Jacques Pépin's book *The Origins of AIDS* published in 2012, which is no doubt the most important and solid work available on the question. The author, a French Canadian doctor who specialises in infectious diseases, offers an overview of the evolutionary history of HIV as well as original historical research concluding that non-sterile medical injections played a decisive role in 'triggering' the HIV epidemic in Central Africa – in short, that the origins of HIV were partly iatrogenic (from the Greek *iatros*, meaning doctor).

Pépin's work stands apart from two other books also expounding theories on the question, which were published around the same time in the United States – *Tinderbox* and *The Viral Storm*. The first – written by Craig Timberg, a journalist at the *Washington Post*, and Daniel Halperin, an anthropologist with long-standing experience in HIV prevention in Africa – defends the idea that the 'West' produced the HIV epidemic by fostering preventive approaches that were erroneously grounded on safe sex rather than on promoting fidelity and circumcision. *Tinderbox*, with its superbly polished writing and composition, provides a concise and elegant version of the age-old idea that African sexuality was intrinsically favourable to the epidemic. It also stages Daniel Halperin (who is both the author and main protagonist) as the misunderstood hero advocating a new, finally effective, approach to prevention. The second book updates the genre of Victorian narratives of exploration and follows Nathan Wolfe, a Californian biologist specialising in 'emerging viruses' in Africa, in his fieldwork. AIDS serves as a textbook case: a pathogen of simian origin, buried away in the depths of the jungle since time immemorial, that supposedly crossed the species barrier and began to threaten the whole world (including the United States). The book's message is simple: the HIV catastrophe foreshadows other, worse catastrophes to come, unless we trust Dr Wolfe and his virus hunter teams to travel the lengths and breadths of the equatorial forest and 'eradicate pandemics before they strike' according to the motto of the start-up he founded.

In comparison with these texts, Jacques Pépin's work stands out not only because of how measured it is (he gives space to alternative explanations in his historical overview) but above all because he does not approach Africa, where he lived and worked for a long time, as the 'Other' continent, does not overuse tiresome metaphors of the Congo-river-heart-of-darkness, does not point the finger at 'Africans' and their deviant behaviour, and does not identify a conspiracy of ill-intentioned Western scientists. The catastrophe he describes is both collective and shared. He even admits that there is no reason to assume that, as a bush doctor in the 1970s Congo, he did not pass HIV from one patient to another by reusing insufficiently sterilised equipment. This French Canadian doctor does not try to play the role of investigator, saviour, or upholder of the law.

The book begins by providing an overview of the historical and virological arguments that mark out the scenario of the origin of AIDS. Today it has been established that the HIV-1M epidemic (the main virus responsible for AIDS⁴) began at the beginning of the twentieth

⁴ The vast majority of cases of HIV-AIDS in the world are caused by the HIV-1M (for 'Main') virus. This is the main pandemic virus, which has diversified across the world to form numerous types and sub-types, like HIV-1M type B in Europe and the United States. Rare forms of HIV-1 (groups HIV-1O, HIV-1N, and HIV-1P) are

century in Central Africa. The colonial town of Leopoldville (Kinshasa), where the presence of the virus has been retrospectively proved since 1959, served as the incubator for the epidemic. It is also recognised that the virus is closely related to the simian immunodeficiency virus (SIV) circulating among chimpanzees in the Congo basin, particularly in south-east Cameroon. A series of open questions remain, which are the starting point for Jacques Pépin's work. How did the virus pass from chimp to man? What epidemiological factors can explain the appearance of the virus in such a small window of space and time (1890-1940)? How can the initial emergence of the virus be retraced, from south-east Cameroon to Leopoldville and then the rest of the world?

A cut hunter

Jacques Pépin moves fairly swiftly over the explanation for the crossover of the virus from chimp to man, which is fairly consensual: hunting and eating great apes, a practice established throughout Central Africa, can lead to injuries or cuts when handling the meat, providing opportunities for a simian virus to infect a human host. According to this explanation, the index case for the AIDS epidemic is presumed to have been a 'cut hunter' or a butcher – no need to invoke mysterious medical manipulations. The bushmeat theory was long considered a sufficient explanation among specialists in the field. Developed in response to Hooper's accusations, it cemented an alliance of convenience between virologists – for whom it was an opportunity to garner media attention for somewhat austere research in viral genetics – and 'conservationists' (like the WWF) – for whom this explanation of the emergence of AIDS was a timely argument to mobilise Western opinion against the hunting of great apes (by Africans) in order to avoid new epidemics of retroviruses in the future.

The 'bushmeat' theory, which met with extraordinary media and scientific success in the early 2000s in Europe and the United States, did nothing to change Western (or even colonial) perspectives on Africa. To take up Jean-Pierre Dozon's analysis, the theory focuses on an original 'sin' (implicitly African) which is described as a violation, i.e. eating species of apes that are 'too human'. The AIDS epidemic, as explained by most virologists, is considered the consequence of a twofold transgression of the natural order, with the first violation, eating apes, then compounded by the more general disorder caused by modernisation, urbanisation, and the decolonisation of Africa in the 1960s and 1970s. This '*écologique-chic*' [environmentally trendy] paradigm⁵, which made the career and fortune of 'virus hunters' like Nathan Wolfe⁶ – who became talk-show and TED-talk superstars – nonetheless leaves many contradictions unresolved. The principle is fairly straightforward: if bushmeat has been consumed since time immemorial *and* at unprecedented levels since the end of the 1990s due to the 'crisis' resulting from the brutal logging industry in tropical forests, then why did HIV emerge in the first half of the twentieth century and not before or after?

Analysis of the genetic sequences of the different viruses in the HIV family circulating among humans and among apes allows interspecies transmission events to be dated in absolute terms through the principle of the 'molecular clock'. For HIV-1M or other, less

also in circulation, mainly in Central Africa and Cameroon, where they only represent a minority of infections. Another virus, HIV-2, which also exists in different forms, is also present mainly in West Africa. Genetic data show that these different viruses infected humans from different simian reservoirs through *distinct* events.

⁵ This expression was coined by Jacques Leibowitch. Jacques Leibowitch and Claude Capelier, *Pour en finir avec le SIDA* (Paris: Plon, 2011).

⁶ See for example his portrait in the *New Yorker*: <http://www.newyorker.com/magazine/2010/12/20/the-doomsday-strain>.

common forms of HIV, crossover from chimpanzee to man most probably took place between 1890 and 1940. But what factors can explain the separate and simultaneous appearance of several SIVs [Simian immuno-defensive viruses] in humans in early twentieth-century colonial Africa?

The sexual hypothesis

Jacques Pépin is not the first person to try and answer this question. For many researchers, the explanation lies in social and sexual changes. The emergence of Leopoldville, a town without any demographic equivalent in the region in the early twentieth century, provided new and ideal conditions for a sexually transmitted virus like HIV to spread. The colonial town was initially much like a work camp, where the huge sex ratio imbalance in favour of migrant men went hand-in-hand with the expansion of intense and centralised prostitution. A migrant worker, infected in his region of origin, a forest area in neighbouring Cameroon, could have been the spark that set off a highly flammable area, to take up the image of *Tinderbox*, which devoted many pages to this sexual explanation for the emergence of HIV.

According to this reading, for centuries SIVs only produced epidemiological dead ends, in the absence of sufficiently extended and connected sexual networks. The infections remained in isolated village communities where they died out on their own until colonisation which, by ‘inventing’ the African city and opening up the region to commercial exchange and human circulation, offered the virus the opportunity to become an epidemic. This hypothesis shows some progress compared to the evasive explanations that preceded it: the factor limiting the appearance of HIV was not transmission from chimpanzee to man as such, but rather the development of conditions (community size and social organisation of sexuality) that were sufficiently favourable to human-to-human transmission of the virus for the epidemic not to die out on its own beyond the unfortunate hunter and his network of sexual partners. Thanks to data from the current HIV epidemic in Africa, it is well known that heterosexual transmission of the virus is relatively *inefficient* without co-factors like the presence of genital warts caused by other STIs. In other words, when a computer simulation of the epidemic is conducted based on the transmission parameters known today in Africa (number of partners, risk of transmission through unprotected sex, life expectancy of infected individuals, rate of STIs, etc.), it transpires that a lot of bad luck would be needed to ‘set off’ an HIV epidemic on the basis of one single case. The statistics suggest rather that the virus is likely to die out with the few people it manages to contaminate. This is a point of general consensus among specialists, including Pépin.

To support the hypothesis of an exclusively sexual origin to the HIV epidemic, other factors must therefore be taken into account. Certain proponents of this version ‘add’ mass prostitution and an extremely high prevalence of STIs to the computer model, based on a few pieces of historical data exhumed from Belgian colonial archives about Leopoldville at the beginning of the twentieth-century.⁷ Others, like Timberg and Halperin, insist on the role played by the lack of circumcision and the upheavals in sexual networks linked to colonisation and Christianisation. The computer simulations then work much better, but the weaknesses of this reasoning remain spectacular: it is based on presuppositions that enrage historians of the region (which is described as being fixed in terms of migration, commerce,

⁷ J. D. De Sousa et al., ‘High GUD incidence in the early 20 century created a particularly permissive time window for the origin and initial spread of epidemic HIV strains’, *PLoS One*, 5-4, 2010, p. e9936. <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0009936/>

and sexuality before colonialism)⁸, it calls on data about epidemics of syphilis or other STIs that warrant much more cautious analysis, it has embarrassing echoes of Western epidemiologists' usual obsession with African 'hyper-hetero-sexuality' – Timberg and Halperin's book in particular deserves severe criticism in this regard – and above all, it is solely based on proof provided by an ad hoc computer model that, in a circular fashion, proves what it seeks to prove.

Campaigns of non-sterile injections

Jacques Pépin's scenario takes up a similar question – what factors allowed efficient human-to-human transmission of a simian virus that was not very 'fit'? However, he begins with a different hypothesis: the role played by medical injections, suggested by several researchers since the early 2000s, such as primatologist Preston Marx, epidemiologist Ernest Drucker, independent researcher David Gisselquist, and, in France, AIDS veteran Jacques Leibowitch.⁹ The context of colonial Central Africa in the first half of the twentieth century was exceptional in demographic terms and perhaps in sexual terms, but also in medical terms. From 1910 onwards, the whole region from Cameroon to the Great Lakes, was subject to massive efforts on the part of colonial powers to fight epidemics of tropical diseases, particularly sleeping sickness and yaws. Huge screening campaigns were launched, followed by treatment of cases by a series of injections. This 'mass medicine' was among the priorities of the colonial powers, particularly in the Belgian Congo, in Cameroon, and in French Equatorial Africa, and it intensified until independence, reaching its peak after the Second World War thanks to combined progress in transportation and pharmacology. Jacques Pépin retraces with great clarity the implementation of this medical system, which is relatively well known among historians, and looks in some detail at the treatment protocols and techniques used. In rural zones and urban centres alike, tens of millions of Africans were subjected to blood tests and series of injections, one after another, as if on an assembly line, in conditions where needles and syringes were almost automatically reused from one patient to the next.

The scenario for the emergence of HIV could therefore be that a medical team visited an isolated village in south-east Cameroon, where the syringes used to treat the famous hunter infected with the SIV from the chimpanzee contaminated several members of the village. It is worth recalling that HIV transmission by non-sterile injection is infinitely more efficient than sexual transmission. According to this hypothesis, medical intervention allowed a critically large pool of infected people to be established in a rural area, and one or several of these people later migrated to Leopoldville where the sexual transmission of HIV would have met with much more favourable conditions. Moreover, women suffering from venereal disease, especially prostitutes, were particularly targeted by medical services, which themselves carried a high risk of transmitting the virus by injection, thus creating a sexual and iatrogenic amplifying loop for the epidemic. And this all took place in Leopoldville, a city that had an exceptional level of medical personnel and infrastructures. 'A perfect storm', as Jacques Pépin writes.

⁸ On this point, see: Tamara Giles-Vernick, Didier Gondola, Guillaume Lachenal, and William Schneider, 'Social history, biology and the emergence of HIV in colonial Africa', *Journal of African History*, 54, 1, p. 11-30.

⁹ E. Drucker, P. G. Alcabes, and P. A. Marx, 'The injection century: massive unsterile injections and the emergence of human pathogens', *The Lancet*, 358-9297, 2001, p. 1989-92; David Gisselquist, *Points to Consider: Responses to HIV/AIDS in Africa, Asia, and the Caribbean*, 1st edn., (London: Adonis & Abbey, 2008); Jacques Leibowitch and Claude Capelier, *op.cit.*

The value of Pépin's work is that he provides fairly solid proof for this both plausible and entirely hypothetical scenario. The first set of arguments concern the epidemic of the hepatitis C virus (HCV) in this region, a topic on which Jacques Pépin is a specialist. HCV is a virus that is transmitted solely by blood (sexual transmission is almost non-existent). It can therefore serve as a marker of iatrogenic contamination: aside from drug users, most cases of HCV infection are linked to invasive medical procedures. In Egypt, the most affected country in the world, the population was massively contaminated by vast programmes of intravenous injections against bilharzia in the 1970s and 1980s. The data concerned HCV for Central Africa are edifying: the prevalence of the virus is very high, particularly among people born before the 1960s who therefore experienced colonial mass medicine. Dating based on genetic sequences of the viruses in the region confirm the fact that there was intense transmission of HCV between 1920 and 1960. It is very likely that this was due to medical injections, before colonial health systems were dismantled, epidemic threats warded off, and single-use equipment introduced thus 'shutting' the time window that was most favourable to iatrogenic transmission.

A few rare epidemiological studies, including one conducted by Jacques Pépin and Cameroonian researchers from the Cameroon Pasteur Centre led by Richard Njouom, have confirmed a statistical link between an individual being exposed to medical injections during the colonial period and infection with HCV and other blood-transmitted viruses. In short, it would seem that the vast programmes of mass medicine during the colonial period involuntarily caused a large-scale iatrogenic epidemic of HCV and perhaps also of HIV. Even though the latter is not as easily passed on by blood than HCV, and it may not have been transmitted on quite the same scale, the fact remains that the data on HCV, which are well presented in Jacques Pépin's work, reverse the burden of proof to some extent. It becomes more difficult to maintain a purely sexual reading of the origin of HIV and not to take into account the effects of colonial medicine. In other words, the most parsimonious theory (i.e. the one that offers the most simple explanation, according to the term used by evolutionists) for the emergence of HIV in Central Africa in the twentieth century gives a decisive role to iatrogenic factors.

Of course Jacques Pépin's book raises as many questions as it answers. Disciplined historians might regret certain shortcuts and some of the slightly lightweight contextualisation – it is almost galling that a doctor should provide such an efficient summary of the vast historical literature available on Central Africa and colonial medicine. Virologists will also note that the scenario suggested by Jacques Pépin skips somewhat quickly over the question of the virus's adaptation (several evolutionary stages are necessary for a SIV to become an HIV) and over the role that medical techniques like transfusion may have played in giving a leg-up to the SIV, passing it between humans when it had not yet adapted to sexual transmission. However Jacques Pépin's book nonetheless remains a superb example – valid above and beyond both HIV and Africa – of the extraordinary potential of tools in evolutionary genetics (the so-called 'phylogenetic' approaches) for understanding the history of epidemics and environment. Although the author has only gone so far, he has taken an epidemic that for long time was only understood through the culturalist lens of sexuality and African traditions and has finally laid out the foundations for an analysis of the biopolitical transitions linked to colonialism in Africa: technological, epidemiological, demographic, environmental, and social shocks of which the emergence HIV is ultimately just one aspect among others.

The pedagogical written style of *The Origin of AIDS* is modest, patient, and gentle, even though along the way it tarnishes the reputations of many a ‘hero’ of French and Belgian colonial medicine who are still famous today. It is a little as if the author were hesitant about succumbing to the easy option of storytelling. This makes a welcome change from the other two books, with their more radical theories, more polished writing, and much more ambitious communication strategy. For readers interested in the inevitable links between science, narrative, and obsession, reading *Tinderbox* or *The Viral Storm* – bestsellers available in any airport shop across the Atlantic – will no doubt prove less disappointing. The over-written prose by *Washington Post* journalist Craig Timberg, and the embittered and ambitious duo he forms with Daniel Helperin on their journey through an Africa characterised by its hopelessly free sexuality, shares something of what makes Ed Hooper or Nathan Wolfe’s books (the latter also written with a professional writer) intriguing and even moving. These narratives testify to the desperately fine line in science that separates conviction from obsession, interpretation from paranoia, success from obscenity, and enthusiasm from stupidity. Whether the question of the origin of AIDS is resolved or not, one day it will definitely warrant a portrait gallery if not a psycho-pathological study.

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