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Africa and the world in viral times : Vitalizing viruses enlivening virality

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By late 2019, the new coronavirus (Sars-Cov-2) had spread far and wide, underscoring the density of global circuits of information, transportation, migration, and trade. At the same time, the virus has 'associated' (Latour 2020) in very different ways – across nations, neighbourhoods and homes – with varying systems of detection, treatment and control, with uneven markets for "essential" labour and goods, and with singular relations, both formal and familial, of exchange, obligation and care. In biological terms, viruses are liminal, relational entities. Outside the cells of a host organism, a virus is viable but not alive. The virus takes life (in both senses) not through a viral *attack* on the host, but through dynamic interactions between host and virus (Napier 2012, Brives 2020), which prompts us to ask: How are viruses and virality brought to life? This question calls for a multidimensional and multi-scalar reflection. It interrogates the *bio-social* relations – across space and time – that enable viral transmission, and which may render an infection liveable or *virulent* (Lowe 2017). It is also an *eco-social* question, about what relations between species and habitats might foster novel forms of viral "emergence," in turn intimately connected – both materially and metaphorically – to global extractive economies. The viral question calls for epistemological reflection: Through what modes of knowledge production and materialisation do we bring viruses into the social and political spheres, thereby reconfiguring prior ways of embodying and managing disease? It also invites socio-cultural analysis, about what kinds of virality we animate by telling stories about pathogens and epidemic outbreaks (Wald, 2008; Quammen, 2015) and through our uses of metaphors (such as computer viruses, but also migrants and foreigners as viral vectors). Africa has long been imagined as a space of viral latency and emergence (Auray and Keck, 2015). Now, the global experience of the COVID-19 pandemic invites us to rethink Africa in the world, and the world from Africa. Persistently framed as a viral threat – notably as the origin of HIV and of haemorrhagic viruses – Africa occupies a key place in the neoliberal bio-security worldview (Cooper 2008, Wald 2008). As an incubator of yet-unknown pathogens, the continent is a virological "hunting" ground (Lachenal 2015). In the colonial imagination, it evoked anxieties about both "white vulnerability" (Anderson 1996) and its own depopulation (Dozon 1985). Can we critically rethink the terms and frames of Africa's virality, while also revisiting virality in and from Africa? The current map of unequal access to vaccines (and its corollary of restricted movement) metaphorically echoes attempts to prevent illegal immigration; is this just a viral-themed replay of older patterns of population control? By reversing our approach to viruses, as objects/agents whose liveliness and pathogenicity must be negotiated – rather than as autonomous threats – this special issue invites its contributors and readers to rethink and rewrite virality from the vantage of a global Africa. Its perspective is multidisciplinary, taking viruses not only as a biological reality, but also as topics of circulating and conflicting information, and as high-stakes sites that crystallise Africa's relationship to the world through the construction of risk, mobilities, natural resource management, knowledge production, or inequalities in living conditions and in systems of prevention and care. Taking Africa and viruses as its starting points, this special issue aims to (re)consider how we relate to living entities and worlds, and what this entails for thinking through the thematic areas we outline below.

Africa, "Land of viruses"

Virality and Africa are mutually constitutive concepts in the Western imagination. From its first contacts with explorers and colonial administrators, the continent was viewed as a land of fevers (viral or not) and therefore as the "White man's grave" (Dozon 1995). Africans were blamed for carrying a range of pathogens, from yellow fever (Pam 2018) to malaria, trypanosomiasis (sleeping sickness) and plague. Even when these were recognised as parasitic or microbial, the term "virus reservoirs" was routinely used to describe African masses; a designation that justified racial segregation in cities (M'Bokolo 1982) and militarised campaigns for screening, treatment and prophylaxis, as well as measures of restricted or forced population movement (Lachenal 2014). New viral vaccines were developed through testing on Africans, including for yellow fever - developed in Senegal and Nigeria (Velmet 2020) - and hepatitis B (Moulin, Chabrol and Ouvrier 2018). West Africans were also the subjects of the first large-scale experimental measles vaccination (Reinhardt 2015). Even as Africans continue to serve as vaccine trial populations (Moulin 1996, Couderc 2011, Thiongane 2013), they are accused of "resisting" the eradication of polio (Yahya 2007). Research in/on the African HIV epidemic produced significant advances in both biological and socio-historical knowledge of health (Fassin 2006, Nguyen 2010, Pépin 2011); the HIV-2 virus was first described in Dakar through monitoring, by a team led by Souleymane Mboup, of a cohort of female sex workers, building on the legacy of colonial medical surveillance (Gilbert 2013).

At the same time, social and biomedical sciences often "discover" realities – as viral ones – that populations have long "known" in other terms. These include, for example, the embodied effects of unequal exposure to risk and access to resources for care and protection (measles and malaria are more deadly in Africa due to gaps in vaccination and treatment), but also what has been learned through cumulative experiences of managing pathogenic agents and environments (Hayden 2008, Richards 2016). It is therefore crucial, as the Comaroffs urge us, to develop theories from the South (Comaroff and Comaroff 2012) and to break out of ways of thinking that might be seen, in themselves, as "viral" – in the sense of being underpinned by hegemonic principles, of risk, security and immunity, that are imposed from the North. This can be done, for example, by considering health, from located experiences, through more holistic, relational frames

(Livingstone 2005, 2013). Or, by tracing viruses to reveal complex and dynamic relations between bodies, species, knowledge and care, we can thereby resituate (viral) "local biologies" (Lock 2017) in specific socio-historical contexts.

The articles in this issue point, explicitly or not, to an underlying global health agenda – often set elsewhere but exerting significant influence on what can be known and done on the continent. Yet they also hint at ways in which such decisions are being questioned and subtly or radically altered by African actors. As ethnographic or interview participants, the experts, health workers and patients who figure in this issue raise questions about what really matters on and for the continent (Kleinman, 2006), and about the possibility of truly African forms of research and action within global health arena. The call to vaccinate against a pandemic virus, Sars-Cov-2, on no less than a planetary scale has highlighted Africa and Africans' position within an uneven geography of biomedical goods and of capacities to produce these. Global power relations are further revealed by the constraints imposed on vaccine provision to African countries, particularly in cases when supplies have to be used up fast – whether for material or political reasons – without, as Abdoulaye Touré reminds us, any real debate or decision-making about the conditions, basis and objectives of vaccination, or its place among other health priorities such as maintaining the routine activities of the Expanded Programme on Immunization (EPI), or addressing maternal deaths and the silent «epidemic» of non-communicable diseases (including diabetes and cardiovascular diseases). The politics that condition vaccine supply, access and distribution, at both local and global scales, also intersect with and shape "vaccine anxieties" – the desires for and worries about Covid vaccines – expressed and experienced by African publics (Leach *et al.*, 2022). How will this play out in the long-term, we wonder, given that surveillance programmes to monitor viral gene mutations have already been launched in Africa[1], when African access to vaccines – which will be designed based this surveillance – has not yet been secured?

Questioning the anthropocene

From Wuhan, Covid 19 spread across the world. Countries of the global North realised their vulnerability to viruses, and the need to take seriously measures of anticipation and preparation for future threats. Based on extrapolation from 380 new viruses identified in bats, the Predict (*Reducing Pandemic Risk, Promoting Global Health*)[2] programme estimated that 360,000 to 460,000 viral species are still unidentified. Pressure on ecosystems, arising from intensive extractive and production activities, interferes with the natural cycles of micro-organisms that are endemic in wild species, with which humans may had little or no prior contact. By disrupting wild, especially forest ecosystems, human communities are at risk of closer interaction with pathogens hosted by organisms that inhabit these. According to Jean-François Guégan, large-scale destruction of forests worldwide, particularly in Africa, is increasing cohabitation among wild animals, livestock and humans; thus, he warns, "humans have moved closer to microbes," stirring up microbial cycles to which humans have rarely or never been exposed (Guégan, Thoisy et al., 2018; Guégan, 2020). Human disruption of tropical and equatorial forests creates potential biological bombs that call for urgent adoption of the "One Health" framework. Yet viruses are no longer a threat only to living organisms and the integrity of bodies; they also attack technical and technological systems, and interfere with modes of processing, transmitting and storing information, including personal data. Biological or other, viruses often irrupt and impose themselves unpredictably. They must be taken seriously. The term "Anthropocene" was coined to describe how human activities have overtaken the influence of natural factors in shaping and altering ecosystems. Yet as Michel Magny points out, while the unprecedented impact of human activity on natural environments indeed marks out a distinctive Anthropocene era, its origins raise more general questions about how, as a species, we relate to other living beings including viruses (Magny, 2021).

While acknowledging anthropogenic influences, we might nuance and complexify narratives of viral emergence as stemming from human ecosystems pressure. What should we make of the suggestion, based on work by James Fairhead and Melissa Leach (1995a, 1995b), that forest-dwelling populations in Guinea have decreased since the 2000s, notably due to insecurity associated with rebel incursions from Sierra Leone? Should we account for what Jacques Pépin (2011) has demonstrated: that initial circulations of HIV were stimulated less by the exploitation of forest resources than by colonial urban and health policies, including segregation? Should we also consider that recent Ebola epidemics (in Democratic Republic of Congo and Guinea) originated in human hosts rather than zoonotic (animal) "spillover" (Keïta et al. 2021)? The notion of «Capitalocene» proposed by Jason Moore allows us to go further, by emphasizing how human interactions with "natural" environments are also shaped by extractives logics of both labour and resource exploitation and of accumulation, both capitalist and colonial (Moore, 2017,

1 See for example Afroscreen : https: https://www.pasteur.fr/fr/institut-pasteur/institut-pasteur-monde/actualites-international/afroscreen-renforcer-surveillance-variants-13-pays-afrique, and the Africa Pathogen Genomics Initiative: https://africacdc.org/institutes/ipg/ (accessed 21 November 2021).

2 Predict is a project of the Emerging Pandemic Threat (EPT) program of the United States Agency for International Development (USAID), launched in 2009 to strengthen the detection and discovery of zoonotic viruses with high pandemic potential.

2018). In this perspective, ecology is always economic and political. Beyond philosophical analyses of the multiple challenges facing the Anthropocene — global warming, loss of biodiversity, generalised environmental pollution, extensive human control of ecosystems and demographic pressure — and its consequences for the viral threats and their management on the African continent, this special issue documents, through case studies, biographies and trajectories, as well as their representations, of specific zoonoses and viruses, from animals to humans, and from forest to city.

Circulations

In addition to deforestation, which accelerates inter-species microorganism circulation, growing urban migration and city size in intertropical regions generates greater and more frequent exposures to viral threats, to which the urban poor are disproportionately vulnerable (Guégan, 2020). According to the United Nations (UN), an additional 2.5 billion people will live in urban areas by 2050. Studies in the global North have demonstrated correlations between health risks, well-being, mental health and urban development. The anarchic and uncontrolled urbanization of African cities causes insecurity and violence, environmental and health inequalities, problems of sanitation and problems; these have been shown to play a role in the incidence of communicable and noncommunicable diseases (Mboumba, 2007; Barry, 2014; AFD, 2015; Fourchard, 2018; Ongo Nkoa and Song, 2019).

The environment of (shanty)towns in Africa has been seen as a fertile grounds for inventiveness and creativity (Louveau, 2013; Mbade Sène, 2018) but also as a breeding ground for viral epidemics and dis/ease due to overcrowding and population density (Gonzales, 2021). This special issue addresses how viruses circulate, but also, importantly, how viral circulations are imagined and managed as threats, within a range of possible forms of intervention that include interactive maps and predictive models, the collection and processing of data for and by applications of Artificial Intelligence, as well as in embodied techniques and (reconfigured) rituals of protection.

The issue interrogates how life and the living circulate on global scales, in different forms and through varied channels, and how micro-organisms, both virulent and “attenuated” (as in vaccines), are produced in situ and in laboratories, for purposes of both prevention and (bio)terrorism. While the recent Covid-19 pandemic has revealed our «common biological foundation irrespective of social condition or cultural belonging» (Garapon, 2020), it is also plainly obvious that infrastructural inequalities and a digital divide persist, shaping the material conditions and effects of virality. Moreover, the thesis of a laboratory accident is gaining traction as an explanation for the pandemic; its implications – for both biosafety and politics – must be considered.

We should highlight the absence, in this issue, of contributions focusing on laboratory and diagnostic practices. The deployment of Science and Technology Studies (STS) approaches are still tentative in the global South (Dumoulin Kervran et al., 2018), particularly in Africa, while STS studies on the continent are mostly conducted by researchers from the North (Peterson, 2014; Tousignant, 2018). As the number of African research centres expand, we hope to see greater local engagements with science and technology as sociological objects.

Exceptional regimes, protests

When a viral threat tips over from potential risk to epidemic reality within a located, historical configuration, it often reveals or exacerbates the embodied effects of structural violence, such as legacies of colonialism and apartheid (Fassin, 2004; Farmer, 2005). Exposing past crises and accumulated resentment (Garapon, 2020), viral effects can be seen as remainder and reminder: bodies remember (Fassin, 2006). Responses to viral threats can be read as «moments of exception» (which can be long-lasting), characterized by a «suspension of time or legality specific to each domain», or of a «generalized medical prescription» applied to entire populations (Garapon, 2020). This buttresses the power of authoritarian regimes and nationalisms; yet it can also elicit protest and vocal opposition as “moments of exception” give way to “moments of truth” (Garapon, 2020).

Epidemic containment often draws physical and/or symbolic boundaries, reordering space and populations, relegating some groups – the potentially dangerous carriers – to peripheries or enclosures, sometimes to die, as seen in colonial sleeping sickness control (Lyons, 1985, 1992) but also recent HIV, Ebola and Covid epidemics. Such marginalization and relegation can lead to protest that articulates claims for specific forms of citizenship: therapeutic citizenship, eco-citizenship, global citizenship, etc. This issue features texts that examines moments and regimes of exception implemented in African contexts to tackle viral threats or epidemics, as well as the forms of protest that ensue. It thus considers the inequalities and forms of marginality that are revealed by viruses as they inhabit bodies and societies, as well as those which are formed and contested in the wake of risk-management strategies and regimes of exception.

Virus, geopolitics, production of knowledge

Viruses raise questions about how knowledge and information are produced and circulated, through technical and technological systems, and about state capacities to respond to threats posed by viruses (biological or computer), whether in terms of accessing substances, securing borders and hardware, hosting

or protecting – from cyber-attacks – personal data in a datasphere, etc. When applied to these domains, a focus on viruses could provide novel frameworks for understanding geopolitics, as seen from Africa, where, against a backdrop of humanitarian aid and global health policies, countries of the global North deploy different strategies to gain access to bodies for therapeutic trials (Petryna, 2009), or to ecosystems, wildlife, etc. to exploit or preserve natural resources. What is emerging is a form of colonisation that goes beyond human bodies, targeting living matter and materials with high economic, and epidemic, potential, which could be turned into a basis for virtual war or bioterrorist attack. Thus, Africa could be thought of as a theatre for real, possible or virtual battles over the circulation of living organisms – intra- and inter-species – as well as the prevention and anticipation of viral/epidemic threats on a global scale. Our call for contributions to this issue invited analyses, based on empirical data and robust case studies, on how viruses are redesigning geopolitics from Africa, while creating a continent evolving at different speeds (Brown et al., 2012). Viruses, finally, might prompt us to call into question what constitutes biological life and death, as well as states in between; such as when a virus is not dead but dormant, and social and biological life can carry on as usual – on the surface, at least. We might reflect on how sudden viral irruptions – and the mass deaths they may cause – are represented and interpreted, particularly where real-time digital tracking is deployed for purposes of marketing, surveillance, control, repression, sanction (Sadin, 2015, 2016; Douzet, 2020) or prevention (isolation until a positive or negative result is obtained).

Opening up Africa

The social and biological life of viruses, and the damage they wreak, differ in the global North and South: we are not equal in the face of viruses. Resources to prevent and manage contagion are unevenly distributed, but also governed by rationalities that are specific to each context. Even when outbreaks are planetary, geographies of inequality are formed through travel restrictions and distancing; the reach and effects of an overabundance of information (infodemia); or the speed at which pharmaceutical manufacturers can produce therapeutic and diagnostic substances. While we all live with viruses, the terms and conditions on which we negotiate this co-existence vary depending on geographical, technological and economic factors. The notion of «local biologies» (Lock and Kaufert, 2001) helpfully reminds us that the body is never "just" a biological entity but is always produced – including materially – by history and by economic and social situations. Our relationships with viruses are thus inevitably local. Yet "locality" operates as, and within, dynamic paradigms (Giles-Vernick and Webb, 2013). Over the past two decades, we have moved from an approach to international health that was intended to be global (global health) to one that is meant to be integrated: One Health. This does not preclude modes of intervention that are hegemonic, and often authoritarian and even violent. These often operate with a vision of Africa as the seat of viral threats that must be contained. As mentioned above, Africa has, through anxieties about sleeping sickness and malaria to AIDS and Ebola, persistently been framed as a source of danger. When Covid-19 struck, this representation initially seemed to be turned on its head: Europeans were a threat to Africa[3]. Soon, however, geographies of vaccines and vaccination were repositioning the content as a familiar place of future viral menace. This special issue offers a reflection on the longue durée of Africa-virus relations, in light of a diversity of situated experiences, but also through the analysis of a Euro-American gaze on the continent. Going beyond viruses per se, this issue examines the virality of representations that circulate in and about Africa— once thought of as the «the White man's grave» (Dozon, 1995) — and on the European continent, which no longer appears as an El Dorado, but as a «Black man's grave» as a result of various «necropolitics» strategies (Mbembe, 2006).

Our call for papers was issued at a time when nations across the continent were facing strict control measures, in some cases imposed as part of a health «state of emergency» in response to the Covid-19 pandemic. It therefore comes as no surprise that Covid takes centre stage in most of texts presented here, which address the issues' core themes (circulations, regimes of exception, knowledge production, etc.) from diverse and original perspectives. Analysing market traders' representations of Covid-19 in Burkina Faso, Georges Rouamba and his co-authors illuminate a reconfiguration in the dynamics and relations of citizenship. The result of this, they show, was a downplaying of disease risks, which underpinned resistance to the implementation of control measures. Mohammed Fares also notes opposition to and demonstrations against control measures in Tunisia, illustrating how such resistance served as a pretext for making broader political claims to freedom, dignity and employment. The pandemic context has indeed prompted some citizens to articulate demands for equal access to medical care as well as environmental actions (notably, the disinfection of public spaces to prevent spread of the virus), and even for a rejection of administrative cartographies, in particular the notion of district or provincial capitals (designated, in French, as "chief places"), which creates and enforces regional hierarchies. Gassim Sylla draws on ethnographic research in Guinea to highlight the instability of Covid-19 interpretations, as well as the discrepancies between public health measures and social actors' living conditions. His article concludes that preventive strategies are ultimately impracticable because they neglect lived social and material realities, raising the question of whether they might function as a form of display. Given that policies of distancing and

3 See, for example: https://www.theelephant.info/op-eds/2020/05/15/returning-the-gaze-how-covid-19-is-inverting-colonial-imaginaries/

containment are ill-adapted and therefore largely left unenforced, should their maintenance – as with calls to vaccinate whole populations – be understood as a staged performance targeting an outside audience, yet imposing a high cost on local inhabitants? The contribution from Sylvie Ayimpam and Jacky Bouju substantiates this point of view from the Democratic Republic of Congo. They depict the state's response as chaotic and show how it fuelled denial of viral risk; the mobilization of a state of emergency therefore produced the opposite of its intended effect. Calling this a "dramatic paradox," the authors trace its emergence from authoritarian «necropolitical» governance. Approaching a similar paradox from the perspective of ethnographic fieldwork in Guinea, Fanny Attas proposes to move beyond an analysis of dysfunctions and failures in state systems. Instead, she examines the ontological repertoires that actors draw on, and deciphers the "choreographies" through which they enact specific lived realities of being with viruses. This act of deciphering appears as a novel way of thinking about how knowledge is produced about Africa from Africa, and indirectly reconsiders the place that Africa occupies in broader imaginaries, including those of science. This is, in a way, also the project undertaken by Fred Eboko and his co-authors, who critically examine, through the case study of Côte d'Ivoire, the scientific hypotheses proposed to explain the dynamics of Covid-19 in Africa. Refuting several "erroneous paths," they show how climate research – even if not able to fully explain epidemiological patterns – emerged as "one of the few domains to survive the [hypothesized] determinants of Covid-19 in Africa, which were put forward wholesale based on intuitions derived from past pandemics and liabilities."

To extend this reflection on the place of Africa in scientific practice and imagination, we feature three African actors – who have made significant contributions to the practice and analysis of public health on the continent – in the dialogue and commentary section. Revisiting epidemic responses and the place of medical research, they highlight the achievements of, but also the challenges and obstacles facing, a science that would be by and about the global South; in other words, what it might mean, conceptually and in practice, to decolonize knowledge and expertise. The examples offered by Prof. Socé Fall suggest that health interventions in epidemic contexts are, in a way, already decolonized. He urges African actors to place greater value on this "decolonization", because "no one will come to do it for them." While practices and interventions can, in emergency situations, be controlled by and for local actors, the production of public health knowledge is still largely dominated by outside interests. Dr Abdoulaye Touré points out that Africans have been slow to take ownership of health research because it remains dependent on external funding and on often opaque decisions, oriented towards priorities that do not always match with local concerns, and that this situation results in a form of «disfigurement» of scientific agendas and practices. This situation, however, is starting to change with the emergence of new generations of African experts and a reconfiguration of the institutional forms through which funding is mobilized. Adama Aly Pam provides a historical perspective on the deep roots of this dependence, and the stubborn difficulties of decolonising medical knowledge. Revisiting a case study of epidemic responses to yellow fever in Senegal, Pam shows how French colonial interests in and assumptions about West Africa shaped the early deployment of tropical medicine and public health.

If the sciences resist decolonisation, visual arts might offer a more fertile grounds for opening up and decolonizing our approach to knowledge and bodies, here by hinging them to urban worlds. In the section «Iconographic threads», addressing the body as «contact point between the human and the world», Élise Fitte-Duval addresses the issue of Désaugmentation and alienation. Her reflection is joins that of art historian Yasmine Belhadi, who shows that the works of Franco-Gabonese artist Myriam Mihindou - in particular the video entitled La Robe envolée (2008) and the photographic series Déchoucaj (2004-2006) — can be seen as means of healing individual and collective wounds, by creating spaces of disalienation. In this way, Myriam Mihindou produces a decolonial «aesthetic of care», whose implementation is «a political act with critical and therapeutic potential».

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