Biosocial Medical Anthropology in the Time of Covid-19. New Challenges and Opportunities.

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As the events of the past few months concerning the coronavirus have unfolded across the globe, those of us who teach on a newly established MSc in Biosocial Medical Anthropology have become acutely aware of the immediate relevance of this unique programme of teaching and training at UCL. The crisis of the Covid-19 epidemic is without doubt a biosocial phenomena. It demands a response that can take account and more productively align biological and social understandings of the pandemic in order to examine the dynamics of these complex interactions and to develop appropriate and efficacious interventions. In this blog post members of the Anthropology Department at UCL who collectively contribute to the biosocial medical anthropology masters teaching programme bring together six themes that reflect some of the urgency, relevancy and the vital importance of biosocial medical anthropology in the time of the coronavirus epidemic. They include; the human body and the city, evolutionary approaches, biosocial difference and embodied inequalities, zoonosis and One Health, the Anthropocene and also ageing as a risk factor.

Coronavirus in the More-than-Human Anthropocene

The Anthropocene is a curious concept. On the one hand, it firmly places human beings at the very centre of Earthly narratives of transformation – "the epoch of Anthropos". On the other, it dislodges *Homo sapiens,* situating our species within the wider panorama of life on the planet, forcing us to acknowledge the fact that we exist in delicate equilibrium with an overwhelmingly complex yet interconnected global ecosystem. At one and the same time a reification and refusal of human exceptionalism – and perhaps, for this reason, this contradictory concept can make us feel uneasy.

In this frame, Multispecies Anthropology has much to contribute to our developing understandings of coronavirus and it socio-ecological effects on human health and wellbeing, as well its social, economic, and cultural impacts. More-than-human thinking would seem to be urgently required to better understand the extraordinary agency of the coronavirus. Stories of ecological recovery in the wake of the global lockdown abound. Human health and wellbeing, like all facets of our biological and social existence, emerge out of entanglements with other kinds of beings – and thus a multispecies perspective can help us better understand "the human" as situated within these wider socio-ecological assemblages. Viruses, too, constitute unseen yet irreducibly important agents in the multispecies communities of the Anthropocene.

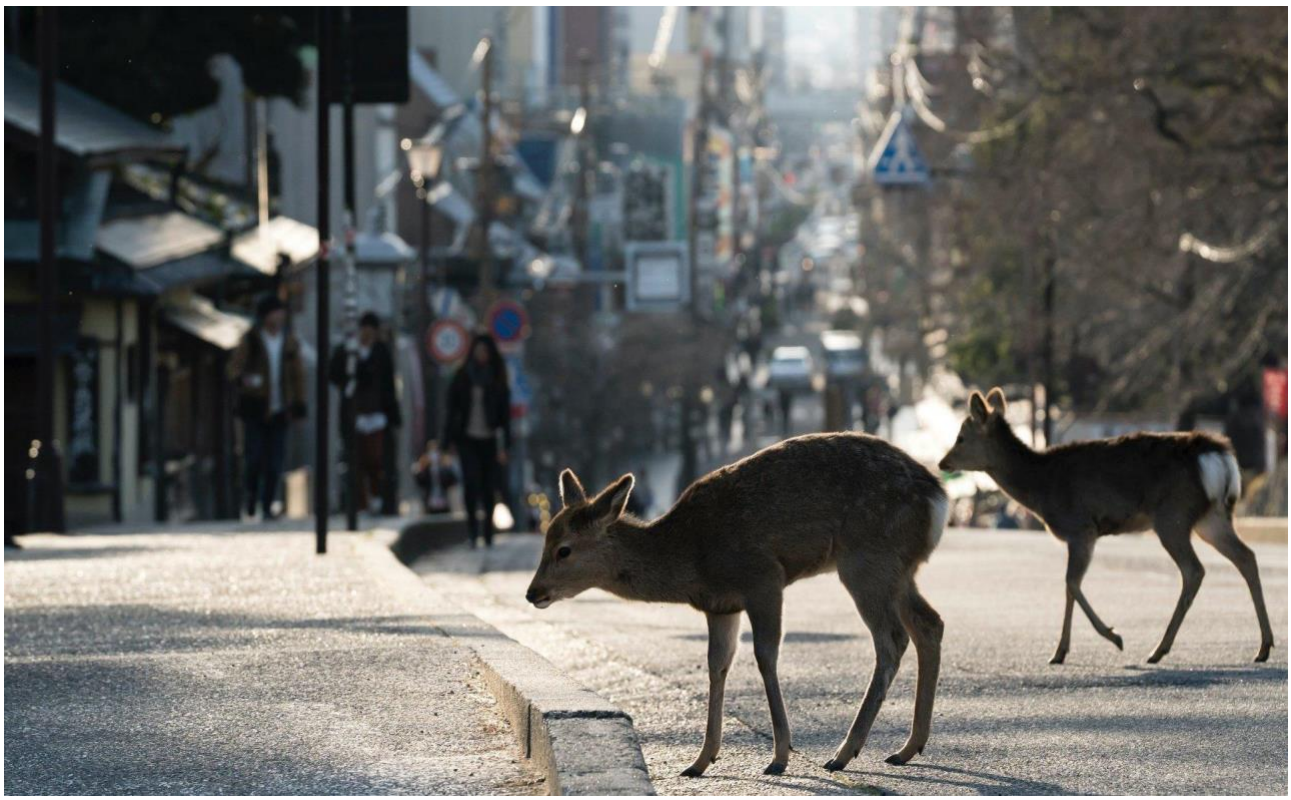
The COVID-19 coronavirus is a zoonotic virus, by definition, a pathogen which breaches species boundaries (Hartigan Jr. 2020) – in this case, most likely originating in bats, before crossing over to human beings in a wildlife market in Wuhan, China, possibly via pangolins (notably, the most illegally-traded animal in the world). Four months later, and the virus has effectively halted the global economy and placed almost half of the global

population into some form of governmentally-enforced quarantine. Could there be a clearer expression of the unruly power of the "feral biologies" that undergird the More-than-Human Anthropocene (Tsing et al. 2020)?

Etymologically, the English word virus stems from the Latin meaning "poison, slime, venom" – an invisible yet harmful substance, something more akin to a noxious chemical than a biological life-form. Yet viruses – submicroscopic parasites constituted of cores of nucleic acid surrounded by proteins – are essential entities in shaping the constitution of biological life. As infectious agents, viruses need host organisms to survive and proliferate. They do not have nuclei or mitochondria, like biological cells, but do contain genetic material (RNA and DNA). Indeed, we now know that viruses have played a fundamental role in the evolution of life on Earth (Villarreal 2008).

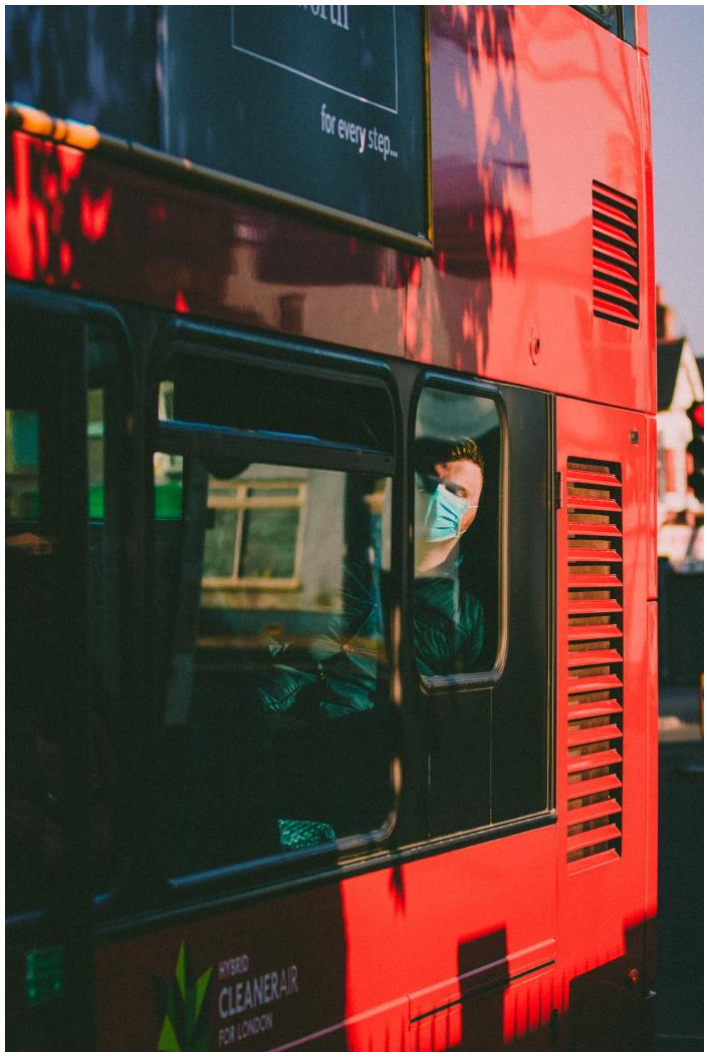
From a more-than-human perspective, viruses present a particularly intriguing case in that they hold an ambiguous status between living and non-living. They problematise the fundamental distinction between organic and inorganic – between biological life and physical matter – which has tended to characterise scientific epistemology (read: the natural and physical sciences; organic and inorganic chemistry; and so on). Viruses seem to occupy the interstitial space between life and nonlife (Povinelli 2017), blurring ontological boundaries and placing human exceptionalism into stark relief.

The staggering global impacts of coronavirus force us to rethink the complex and often unseen ways in which we are entangled with microbiological life-forms, as well as nonhuman animals and the interconnected biosphere at large. If nothing else, the Anthropocene concept demonstrates the extraordinary continuity of social, ecological, biological, and medical phenomena – and the COVID-19 coronavirus, we might say, represents a startling point of convergence where these various reified categories of existence merge into one another in alarming yet revealing ways.



Sika deer roam the streets of Nara, Japan during the coronavirus lockdown. Image source.

Covid 19: The Human Body and the City



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Anthropological and Geographic studies into the relationship between the human body and urban environments highlight the role that pathology and epidemics play in influencing urban culture and living. It is only in the last decade that the majority of the world's population now lives in urban settings, though what comprises the concept of the 'urban' is often fraught with debate. London's built environment, like most major urban centres in the world, has been radically shaped by pandemics in the past. When John Snow, for example, famously identified the handle of a water pump in London's Soho neighbourhood as the source of a cholera epidemic, he set off a chain of important events that not only shaped the way water flows through the modern city. His findings led to massive architectural reform that helped create the image of the modern Thames river, influencing the culture of the city, and indeed setting the foundation for the study of epidemiology.

The biosocial framework here is simple, but profound: cities and the human body are procreative of one and another. Human health and wellbeing can then be seen as interwoven biological and social constructs that exist at the nexus of such a relationship. Covid 19, like pandemics in the past, offers both a warning on the past failures of this relationship, but also an opportunity to think through future structures of the city. For example, the current pandemic affords the chance to question the promise of urban density as a construct that improves well-being in terms of access to and efficiency of urban life, but challenges well-being by creating potential conditions for the spread of illness. It challenges employment and labour structures, and gives pause to think about the nature of the urban 'commute'. The 'commute', the metaphorical bloodstream of the city, brings life and labour into the centre, promoting economy and even creativity (Einstein claimed to be inspired by commuter trains in thinking through theories of time-dilation and relativity). However, the commute reflects urban sprawl, informing the conditions that lead to chronic illnesses. If a biosocial "Anthropology of the Body" can ask how cities and bodies shape each other, the challenges of a pandemic gives us the ethnographic moment to explore this aspect of health in ways we might not witness otherwise.

Biosocial Difference and Embodied Inequalities of Covid-19

While the full epidemiological data about who is most affected by the new coronavirus is still incomplete it has become clear that some groups are more at risk than others. Age (as discussed below) is one risk factor that has clearly delineated a vulnerable population. But there are other demographic dimensions of the global picture now emerging from the Covid-19 epidemic concerning sex/gender differences and also the risk to Black and Ethnic Minority (BAME) communities. These still partially known demographics of the pandemic reflect particular forms of biosocial difference in which the interaction between the biological and social is complexly entangled and where social inequalities also appear to shape embodied health risks, morbidity and mortality.

In the UK men are twice as likely to die from the coronavirus as women, a pattern that that has been replicated in China, Europe and beyond. Yet understanding why that might be entails considering gender as a biosocial category that can address these interactions, whilst also reflecting on how social norms and practices constitute gendered categories of biological difference in the first instance. We need an approach that includes how potential biological factors such as those linked to gender differences in hormones, the immune system and inflammatory responses exist in dynamic interactions with cultural differences between men and women, such as those related to health seeking behaviour. Not parsing the biological and social is vital here in understanding gendered epidemiological profiles of Covid-19 in order to consider, in Hannah Landecker's terms, the 'biology of history' (2015) that informs emerging epidemiological findings about gender differences.

Another trend that is beginning to become particularly starkly apparent in the UK and also in other national contexts is the high rate of Covid-19 infection and death of among Black and Ethnic Minority (BAME) communities.

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The reasons why geographic areas with larger ethnic minority populations in the UK have higher mortality rates represents an equally complex biosocial phenomena. As commentators such as Michael Marmot have pointed out the issue of deprivation and health inequalities, including those exacerbated by over 10 years of austerity in the UK, are playing a crucial part. While these social determinants have long been known to impact health and health outcomes, Covid-19 is materialising these inequalities in newly visible ways. It is making apparent the interplay between 'co-morbidities' among BAME communities and the coronavirus, as well as how this may be linked to housing or occupation. Understanding that some bodies are more exposed than others to the coronavirus means treading a fine line in both recognising *how* the social shapes biological vulnerability *without* newly homogenising or re-stigmatising these communities. A biosocial medical anthropology approach which is attuned to how social inequalities become embodied, drawing on long standing conceptual tools such as 'syndemics' and 'local or situated biologies' may go some way to negotiating this fraught terrain of biosocial difference in the time of the coronavirus.

Evolution and the Novel Coronavirus

COVID-19 is caused by the novel coronavirus but coronaviruses have been among us for years. They are a large family of viruses, and different strains (genetic variants) choose different species as their hosts. Many people first heard about coronaviruses during the 2002-2004 SARS outbreak, when a strain was able to infect multiple species, including humans. In fact, it was after the SARS outbreak that scientists have found that coronaviruses originate in bats. Since then scientists have reported diverse SARS-like coronaviruses found in bats in China, Europe and Africa. But not all coronaviruses have the ability to infect humans. So, what causes the spillover (i.e. when a pathogen is transmitted from the reservoir species to a new one)? Viruses can only replicate inside living organisms. Therefore, from a virus point of view, the more living organisms it can infect the better it can replicate and pass on its genes. Places where various kinds of animals are found together in great quantities are perfect hotspots for viruses to replicate and potentially evolve further to infect more than one species. Although we do not know how exactly the novel coronavirus jumped from bats to other animals including humans, it is mostly likely the result of our engagement with wildlife or domestic animals. This was not shocking for many researchers, either. Research papers, like this one, have warned us to take precautions as they foresaw potential future outbreaks. Bill Gates, in his now famous 2015 TED talk, warned us against a very possible future pandemic where a respiratory virus can cause a severe crisis. The difficulty with respiratory viruses is that they are very contagious (unlike ebolaviruses which spread through direct contact with body fluids).

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A novel coronavirus such as this can also evolve further. Organisms have different generation times (the length of time between the birth of an individual and the birth of its offspring): while a bacterium can divide in every 20 minutes, for us humans the average generation time ranges between 22 to 33 years. Those with a shorter generation time evolve faster. That's why we are in an arms race with many pathogens,

such as the ones that cause malaria or AIDS, because they evolve to become more resistant to the drugs we use to treat them. Evolutionary approaches to health and disease are of vital importance in tracking the past and the future of the pathogens. By using phylogenetic trees, for example, researchers have already traced the origin of the novel coronavirus. From an evolutionary point of view, it is advantageous for a virus to avoid killing its host since it needs living organisms to multiply and spread. But if there are already many hosts available around (like soldiers staying so closely together in the trenches during the World War 1, which triggered the 1918 influenza pandemic), then the virus may evolve to be more virulent (the level of damage a pathogen causes) as it can spread easily, even if its current host does not stay alive for long. The chances of the novel coronavirus mutating to a strain with higher or lower virulence, therefore, depend how easily it can spread among hosts. What we can say is that as long as it is being transmitted happily among its new host- humans, it is less likely to disappear.

Photo courtesy of Alex Tasker

COVID as a Zoonotic Crucible: The biosocial value of One Health for tackling the emerging global pandemic

The swiftness with which COVID-19 has touched every community across the globe is remarkable, but not unprecedented. The speed of spread has made clear the hidden connections that span our 21st century globe, from air infrastructure and population displacement to links between economies and health. At the centre of these webs lays the virus itself, an agent that travelled from a wildlife host into a community in Wuhan, China, and from there, the world.

As the human race focuses efforts on breaking contacts between the infected and naïve, it is vital that we acknowledge the role played by the unseen journeys of animal-human interactions. A recent article published by the Royal Society suggested that zoonotic disease (those capable of animal-human movement) will continue to be an increasing threat to humanity due to the ever-closer sharing of environments and ecologies with new hosts. The interplay between human and animal health has attracted recent cross-disciplinary interest, brought together under the banner of a One Health approach that explicitly recognises the multiple disciplines required to address such complex health issues. Amongst other benefits the One Health approach provides an intellectual space and pragmatic structure to respond to rapid and emerging threats such as C-19. Biosocial scholars have a key role to play in this approach by providing vital insights into how emerging social and biological landscapes can drive human contacts with emerging diseases. If COVID-19 and future pandemic diseases are to be confronted, biosocial and One Health approaches need to play a central role in reshaping our understanding of relationships between species and ecologies across the globe

The Risk of Age in the Time of COVID-19

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At the beginning of this pandemic, the UK government assumed older adults were particularly, if not exclusively, vulnerable to coronavirus, initially forcing only over-70s into lockdown. However, early deaths across the age spectrum made clear that, while old age did seem to play a role in coronavirus mortality risk, it was not the only risk factor, nor necessarily the most important one. The UK government has since expanded its lockdown to include all chronological ages, but it has nevertheless continued to be uncritical about old age and coronavirus in its messaging. There are a variety of reasons why emphasising old age as a risk factor for coronavirus mortality is dangerous, but a biosocial perspective helps to illuminate two especially.

First, while coronavirus mortality risk is concentrated at older ages, the risk is not shared equally amongst older adults, nor is it exclusive to them. As it becomes increasingly clear that structural racism and wealth inequality play a significant role in coronavirus vulnerability, it is essential to understand that the biological experience of age varies, often unequally, depending on how it intersects with a variety of socio-cultural factors, including, for example, race, gender, class, and environment. Focusing simply on age as a risk for coronavirus mortality hides inequalities within ageing trajectories that allow some to age 'successfully' during this pandemic while others die young.

Second, older adults are not simply biologically vulnerable to coronavirus but have been made vulnerable to the virus through political and economic processes. For example, the alarming death rates of older adults in care homes from coronavirus must be understood in the context of continued defunding of the social care sector. With funding cuts, care homes became crowded and their staff over-stretched. In this pandemic, this allows the virus to spread more quickly, generating huge care needs that further overwhelm staff. Focusing simply on old age as a risk for coronavirus mortality divorces old age from its context, reducing it to its biology. But placing old age within its social context, we can see how long-term political and economic processes have weakened the UK care system and, consequently, endangered older adult lives.

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