

Fahim Amir
Cloudy Swords

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e-flux journal #115 — January 2021 [Fahim Amir](#)
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So let us thank this small insect, the mosquito, which has preserved the land of our ancestors for us.
– Sanja Doyo Onabamiro, Ibadan, Nigeria¹

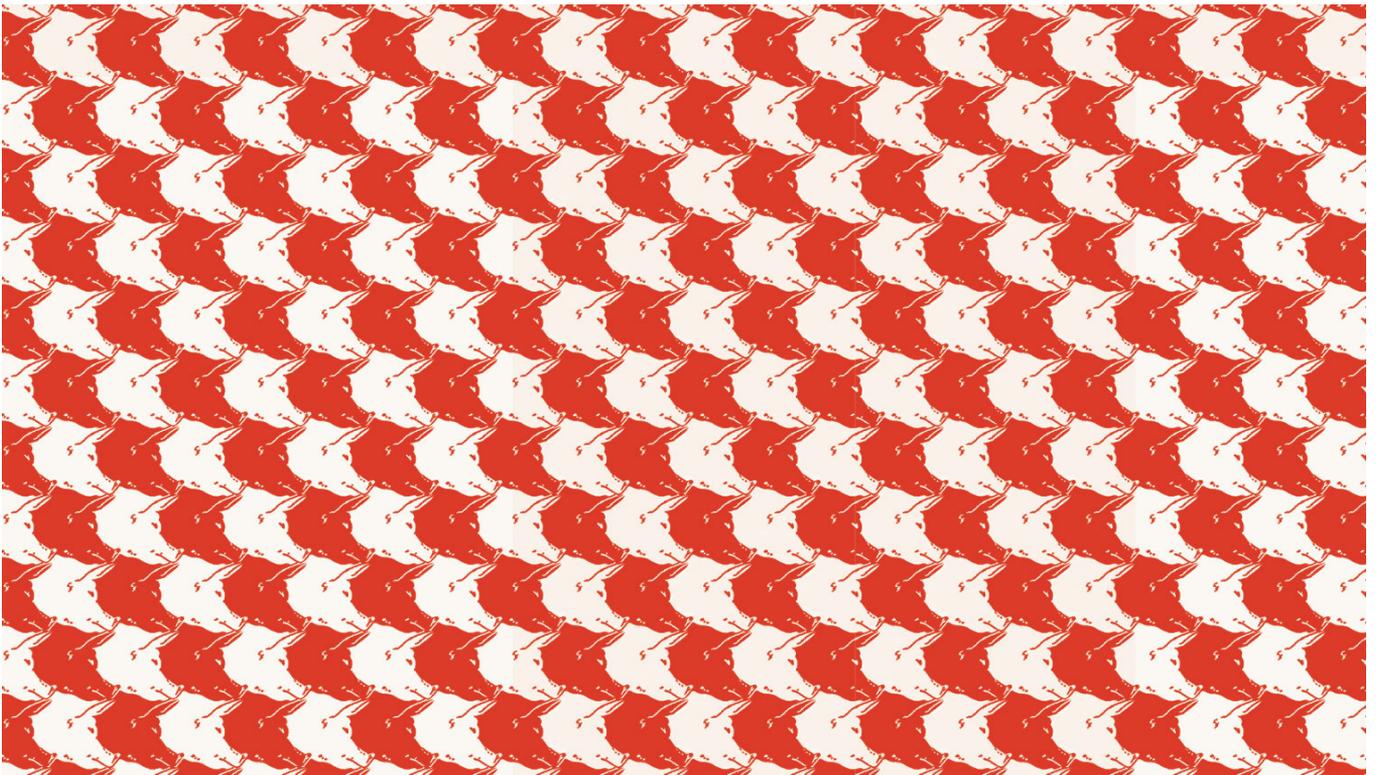
The honeybee has recently risen to become the “insect mascot of environmental politics”² and has outstripped the save the whale and dolphin campaigns of the 1970s and 1980s. Whereas French environmental activists who publicly placed a beehive on the roof of the Paris Opera were immediately arrested, today it seems there is hardly a major cultural institution in the big cities of the West that doesn’t point proudly to an urban beehive on its roof.

The fruit of the labor of the industrious female insects can then usually be purchased onsite in containers smartly designed by local or international artists. In the museum gift shops, the proverbial *busyness* of the bees combines with the creativity of the artists into the effective public relations of a creative industries appeal under the banner of commercialized sustainability and ecological diversity.

The honeybee is a darling animal of ecocapitalists not only because it links worry about survival on the planet with agricultural interests, but also because it carries substantial metaphorical baggage as a hardworking producer, organized on the basis of division of labor, of medically valuable luxury comestibles and nutritious foods, all while connecting big cities with global ecology. Nowadays bees are prized by an increasing number of newcomers to the field of beekeeping “as trendy urban pets to be nurtured and rescued.”³

The honeybee has little to do with nature in the traditional sense. As a rule, we are talking about breeding lines that are kept in rationalized Langstroth hives named after the American beekeeper and clergyman Lorenzo L. Langstroth. Langstroth had further developed the concept of modern, efficient beekeeping proposed by the Swiss beekeeper François Huber. Not long after Jeremy Bentham had presented his first designs for a panopticon that modernized the visual surveillance of prison inmates, Huber’s rationalized beehives made it possible to inspect bees effortlessly. They consisted of square wooden frames with identical dimensions that could be “opened” like the pages of a book.⁴ Now, nothing could escape the scrutinizing gaze: what was ready to harvest, what was sick and needed to be culled, and what could be left in place to thrive on its own.

Reading Material for the Road to Hell
Bees are by no means innocent representatives



Pattern for the cover of Fahim Amir's book *Being and Swine: The End of Nature (As We Knew It)* (2020). Illustration: Caleb Mitchell.

of nature. The commonly known honeybee (*Apis mellifera*) was introduced to North America by European settlers, and spread as quickly as the white settler families. Since bees swarm out on their own, they formed a colonial avant-garde that flew fifty to a hundred kilometers ahead of the advancing frontier of colonization, which was not lost on the Indigenous nations.⁵ It is part of the political poetry of Jim Jarmusch's anti-Western *Dead Man* (1995), probably the most artistically precise reckoning with the historic and cinematic founding myth of the United States, that even this detail is seen more sharply than by most others. In the film's opening sequence, Johnny Depp, playing an accountant from Cleveland called William Blake, is sitting on a train on his way to take up a job offer in a city called Machine. Along with the train (an old symbol of progress and industrialization) he re-enacts the historical expansion westward. During the trip the other passengers become more and more frightening and desolate, appearing "jagged, ragged, disheveled, and uncivilized."⁶

At one point they jump up and shoot wildly out of the window – "murderous fun," killing bison by the hundreds; later a stoker, who seems to have sprung right out of a Kafka novel, sits down by the timid Blake and asks him what motivated him to set off on the road to hell. For a few seconds, hell is visible in the form of a burned-down Indigenous village. Blake quickly turns his attention back to the magazine he has chosen as his traveling companion on his road to hell. The magazine is titled *The Illustrated Bee Journal*. Now, for a few seconds, advertisements for products like "Vandalia" can be seen: civilization and barbarism switch places. If the Vandals once sacked Rome, it is now the Romans, the real barbarians, who are ransacking the Vandals.

Imperial Insects

Today bees are deliberately incorporated into neocolonial pacification strategies. The US Armed Forces research network is testing the deployment of bees as "six-legged soldiers,"⁷ which in the coming wars will be "efficient and effective homeland security detective devices,"⁸ designed to detect insurgents' bombs more cheaply and quickly than ever before, at least according to a report from the Stealthy Insect Sensor project team at the Los Alamos National Laboratory.⁹

While the female worker bees perform a variety of jobs in the hive, the male drones are limited to very specific tasks. Mary Kosut and Lisa Jean Moore draw the metaphorical lines of connection between beekeeping and modern military policy in the figure of the "specialized,

specific, and covert" work of predator drones as they have been routinely deployed by the US military since the presidency of Barack Obama for the extrajudicial execution of those designated as "enemy combatants": "in both bee culture and military culture, the role of drones is reduced to the performance of a series of 'heroic' duties [, namely,] surveillance, bomb-dropping, and insemination."¹⁰

But anyone who survives drone attacks is still not spared from metaphorical and real insects, for insects are a part of the "war on terror," as was revealed in 2009 by the publication of CIA memos on permissible torture techniques. Second to last on the list of ten "legitimate" torture techniques, between "sleep deprivation" and "waterboarding," is "insects placed in a detention box."¹¹ The unredacted part of the memo explains that Abu Zubaydah (who was apprehended in Pakistan in 2002 and then moved through a chain of offshore CIA prisons in Thailand, Poland, and Jordan, until he landed in Guantanamo for an indefinite stay) was physically and mentally so strong that normal interrogation techniques no longer worked. Therefore, his fear of insects was to be instrumentalized in the cause of national defense. According to the memo, the plan was to lock Abu Zubaydah in a cramped box (the eighteen-hour box permits only standing and the two-hour box only sitting) and to tell him that a stinging insect would be placed in it. But the actual plan was to use a harmless caterpillar.¹² Without giving any rationale, the memorandum explains that this specific torture technique was no longer used. Nonetheless, the imaginary insect remained a state secret until 2009.¹³

Neel Ahuja argues that this seemingly subtle technique for producing truth through "bestial touch"¹⁴ follows a liberal logic that measures how humane and civilized torture by "trans-species intimacy" is in terms of the alleged absence of permanent physical and psychological damage.¹⁵ For Ahuja, the meaning of this well-calculated abandonment of an apparently unusual torture method by the highest levels of the US government is only explicable when one considers a broader discursive semantic landscape that comprises the current racialization of the "brown Muslim multitude," colonial rhetoric, the insectoid imagination of terrorist forms of action and communication, as well as gendered bodies and "weaponized affects": "Following the double structure of metaphoric relations of insects to the terrorist psyche, the insect is both the weapon against an enemy and a description of that animalized enemy; the monster-terrorist is an insect that must be squashed, paradoxically by the threat of insectivity to his masculine self-

image.”¹⁶

Mosquito Army

While bees are currently esteemed as universally valued bringers of life, there is another insect that can't be left off any Buzzfeed listicle of the world's deadliest animals: the mosquito. No other animal accounts for as many human fatalities as this insect. That's why the eradication of mosquitoes is a typical focus of philanthropic initiatives, from the Rockefeller Foundation to the Bill & Melinda Gates Foundation. But what if the front lines are not so clear-cut?

The term “differential immunity” describes the phenomenon that people who have contracted malaria, for instance, early in life and survived have an advantage if reinfected over those who are fighting it for the first time. This influenced colonial entanglements and struggles for national independence, as the historian John McNeill argues.

For example, when the Maroons of Suriname were gripped by revolutionary fever in the 1770s, malarial fever swept away the Dutch punitive force. McNeill waggishly demands a monument to mosquitoes next to the stone presidents on Mount Rushmore, because the American Revolution would also have had a different outcome if the anticolonial forces had not had an advantage over the British pacification troops because of their prior immunity.¹⁷

In fact, the often fatal fevers known as malaria were recognized as the greatest health hazard for Europeans in tropical areas, and considered a major obstacle to the further colonization of territories beyond the coastal areas of Africa, South America, and Asia. Colonial military analysts regarded malaria “as an already existing enemy resisting imperial expansion.”¹⁸ Yet only at the end of the eighteenth century did this battle between malaria and militarism reach its peak, as the anthropologist Diane Nelson explains:

The creation of transportation infrastructure such as canals and railroads, the deployment of armies, and the clearing of ground to plant tropical products all had to confront (in addition to uprisings, escape, work slowdowns, and other human-level obstacles) an invisible microbial resistance. The French, British, and US raced to find a cure for malaria in order to keep whites alive in their new milieux.¹⁹

One French colonial official complained in 1908: “fever and dysentery are the ‘generals’ that

defend hot countries against our incursions and prevent us from replacing the aborigines that we have to make use of.”²⁰ While infectious diseases were the generals of the anticolonial resistance, tropical medicine was assigned the role of a “counterinsurgent field.”²¹

It comes as little surprise that the most important researchers in this field were officers serving in colonial outposts. In 1897 in Calcutta, this transimperial medical-military network (which was supported by countless local helpers) finally succeeded in scientifically proving the “mosquito theory”: mosquitoes were identified as carriers of the malaria pathogen from infected to non-infected persons.²² The shift toward Pasteur's microbial theory as a key to understanding diseases “structured a powerful imaginary of the colonies as vast laboratories where the enactment of hygienic measures could be tested, and the results compared across time and space.”²³ Until then, prevailing theories in tropical medicine had attributed the fever to noxious vapors issuing from the ground (hence the name *mal'aria*, “bad air”). “Once germ theory was recognized, the idea of ‘environment’ became internalized and miniaturized in the form of invading entities; the key to medical success was now to exert control over body invaders.”²⁴

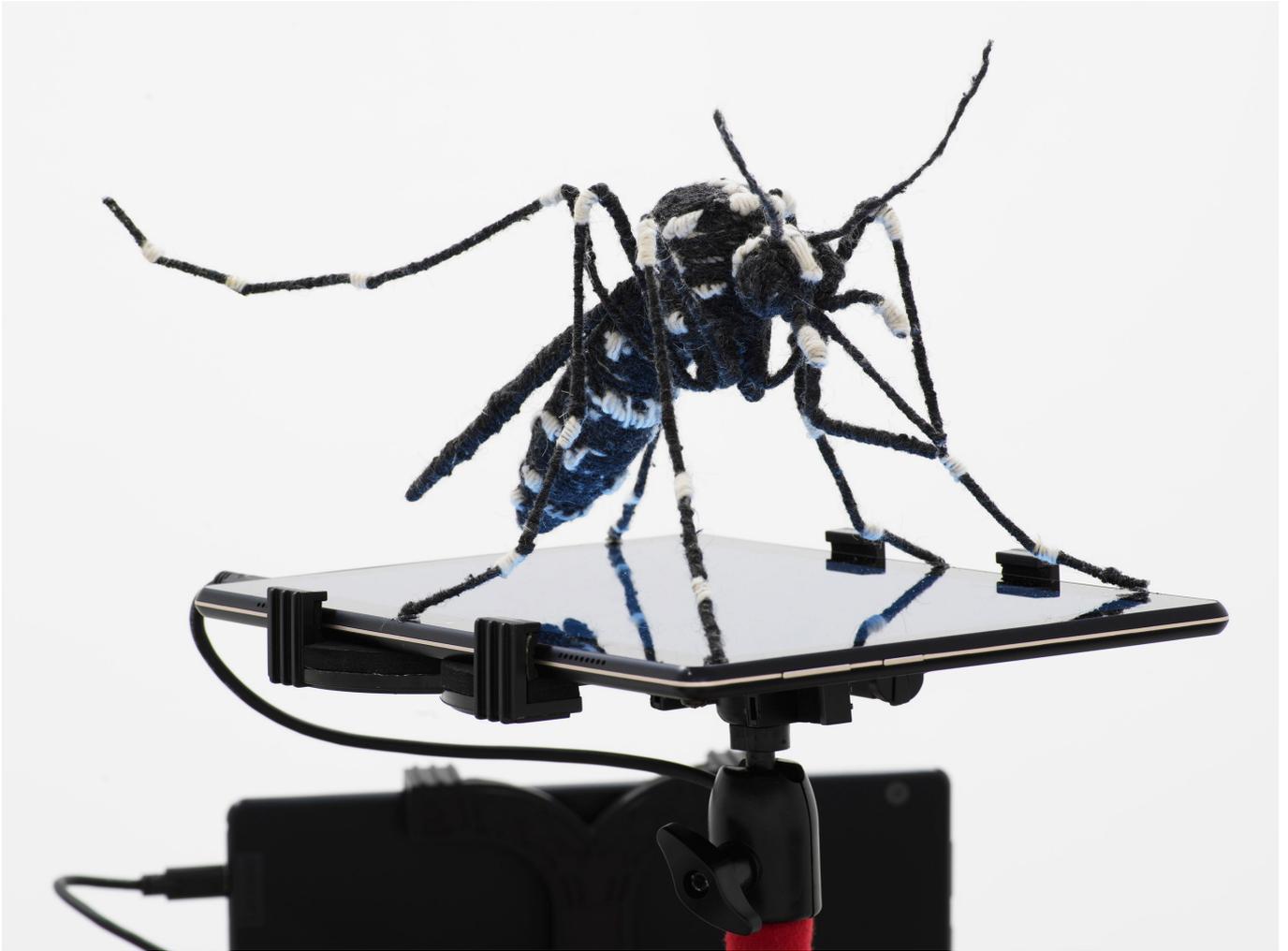
The Birth of Segregation from the Spirit of Mosquito Control

Humans living in imperial spheres of influence were suddenly brought into focus as a medically dangerous part of this environment: the Colonial Office promptly sent an expedition into the most malaria-infested corners of the British Empire. As the main problem, they quickly identified the African child. While adult Africans exhibited only mild malaria symptoms, African children often got seriously ill. Now that colonial medicine had defined them as the main reservoir of pathogenic germs, the expedition concluded its final report with the urgent recommendation to isolate white settlers and officials from African children. The suggestion was accepted. But how wide should the isolation zone be to guarantee that no bloodthirsty female mosquito could overcome it in her search for a drop of blood?

It was agreed that all new European settlements were to be surrounded by an anti-mosquito zone with no dwellings approximately four hundred meters wide, and that no locals were allowed to live within this area, so as to prevent female mosquitoes from feasting on infected children and then biting a European. Secondly, the exclusion belts were intended to provide protection from bush fires, which were allegedly especially common in the locals' neighborhoods, and thirdly they were supposed

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Natascha Sadr Haghghian, *passing one loop into another*, 2020. Installation view Neuer Berliner Kunstverein. Photo: Jens Ziehe.

to protect the Europeans from “having their rest disturbed by drumming or other noises dear to the Natives.”²⁵ Emma Umana Clasberry points out that this form of segregation was even implemented in regions of Nigeria that were hardly affected by bush fires. Nor was segregation restricted to residential areas: “Even cemeteries were segregated.”²⁶

Since mosquitoes are nocturnal creatures, segregation had to be most strictly enforced at night. While officials and merchants performed their duties during the day in the city, during the dangerous African nights they were protected from children and mosquitoes in their gated communities. But because Europeans also didn’t want to give up the amenities that made the colonies so attractive, i.e., servants, they were permitted to continue housing two servants for personal services in remote rooms at the back of the house, which undermined all of the segregationist health efforts.²⁷

The segregationist mosquito doctrine was administered in Africa with varying degrees of strictness: from its most stringent form in the Belgian Congo, where the *cordon sanitaire* included a golf course, a botanical garden, and a zoo; to West Africa, wherein the new city of Dakar, after the malaria outbreak of 1914 all traditional attic houses in the European residential neighborhoods were burned down; to the German colony Cameroon, wherein 1904 the medical authorities published a city map that suggested dividing the city into six areas on the basis of race and race mixture.²⁸

In Accra, the capital of Ghana, European merchants were permitted to work near the harbor during the day. But they were legally required to spend the nights half a mile away in a European “reservation” – “a distance that was farther than a mosquito flight.”²⁹

To gain more precise data about the flight behavior and biting patterns of the mosquitoes, migrant men were quartered in mosquito traps along the protection zone around the airport and prohibited from leaving the traps at night.³⁰ When it turned out that female mosquitoes could fly about one mile, the village of Nima was suddenly within the protection zone and was relocated, that is, its inhabitants were evacuated – it is not known under what circumstances.³¹

In South Africa, the hill stations became part of the “clean air circuit” that attracted many sick and debilitated Europeans from the overcrowded cities of the old continent to regain their health in the colonies before traveling back to carry out their duties at home. At the same time, hill stations and the European “healthy quarters” finally allowed familial reunification for civil servants who had left their families in their country of origin to work in the colonies – a

process that helped end decades of racial mixing and personal relationships on various levels.³²

The colonial city planning policy of using the range of movement of female mosquitoes to determine where exactly the local population was allowed to live lasted about ten years and had passed its peak by 1920. Responsible for its demise were the local elites, who put pressure on the British colonial officials from Hong Kong to India: “Their arguments against the expropriation of their lands for the health needs of a handful of Europeans – who then proceeded to live with lower-class African servants, mistresses, and sometimes their mistresses’ supposedly deadly children – were even persuasive to colonial governors.”³³

The policy of segregation for health reasons was abandoned, at least rhetorically – after all, the cities were already built – but many of the models of segregated urban residential areas that had been implemented persisted well beyond this time.³⁴ We have the fight against the mosquito to thank for one of the worst ideas in the political history of social relations: segregation. The concept originally arose in the medical field and meant the isolation of “contagious” *individuals*. The first time the expression was used to denote a spatial separation of a general *group* was in a 1904 issue of the *British Medical Journal*: “Manson has also declared segregation to be the first law of hygiene for Europeans in the tropics.”³⁵ As a “class term, it soon became, in South Africa, America, and elsewhere, a keyword in the vocabulary of race relations in the twentieth century.”³⁶

Women in Panama

At the beginning of the twentieth century, the discovery of mosquitoes as malaria and yellow fever carriers reawakened long-cherished plans such as the construction of the Panama Canal (1904–1914), which was to link the Atlantic and Pacific Oceans. Finally, a majority of the workers employed no longer constantly got sick or died.³⁷

In 1916, the director of the US Bureau of Entomology and longtime general secretary of the American Association for the Advancement of Science rejoiced at this success as “an object lesson for the sanitarians of the world” – it demonstrated “that it is possible for the white race to live healthfully in the tropics.”³⁸ As Timothy Mitchell writes: “In 1915, the year after the canal’s completion, the newly established Rockefeller Foundation took over the mosquito campaign from the U.S. Army and launched a worldwide program to study and control the two mosquito-borne diseases. Thus the global movements of the mosquito gave shape to a transnational corporate philanthropy.”³⁹ Disease



Alina Kunitsyna, *Samting Noting* (aus *Fahim Amir*, 'Schwein und Zeit', S. 112), 2020. Oil on canvas, 120 x 120 cm. Image courtesy of Galerie Kandhofer.

was to be defeated not by improving social conditions or through medical intervention, but by the physical elimination of the hostile species. For the first time, war was declared on the mosquito.⁴⁰

The urgency and severity of measures to combat dangerous diseases always had the collateral benefit of social pacification. In 1918, George Vincent, president of the Rockefeller Foundation, candidly declared: “For purposes of placating primitive and suspicious peoples, medicine has some decided advantages over machine guns.”⁴¹

The construction of the Panama Canal, as one of the most important “transportation utopias” of the twentieth century, not only allowed commodities to be shipped more efficiently and quickly, but it also advanced the military expansion of the United States in the Caribbean.⁴² The US occupation of the Canal Zone had already brought racist Jim Crow laws, which had followed the abolition of slavery in the US, to the spatial structure around the canal. Yet, when the increasing presence of US troops and the flow of migrant laborers in the Canal Zone during the two world wars heightened fears of sexually transmitted diseases, “a medicalized state of war ... attacked environmental space using the model of antimalarial campaigns aimed at controlling mosquitoes.”⁴³

Analogous to the stagnant waters where mosquito larvae develop, and to the mosquitoes themselves, the female body was now declared to be a reservoir of pathogens. Again and again, this body allegedly first infected US troops, only to spread to the white wives back home: “The spatial imaginary established through control of malarial mosquitoes deeply influenced cartographies” of sexually transmitted diseases like gonorrhea and syphilis, as well as the attempt to control them.⁴⁴ Although US troops themselves were an excellent vehicle for the global spread of disease, the risk was one-sidedly shifted to the local population and migrant workers, “conflating the body of the sex worker with the US occupation itself.”⁴⁵

Besides the inspection and closing of brothels and the establishment and expansion of vice squads and prophylaxis stations, during the night women were picked up all over the city and forcibly tested for sexually transmitted diseases – if the results were positive, they were detained in something between a prison and hospital for up to six months. This control over the movement of women in public spaces as potential sex workers and disease reservoirs was carried out just as women’s rights activists were increasingly drawing attention to themselves in the 1940s.⁴⁶

Fascism and the Goddess of Fever

At the same time women in Panama were becoming objects of police surveillance by way of combatting malaria, Italian fascism was trying to defeat a nature imagined as female by declaring it a priority to civilize the marshes of the Pontine Plain. The ancient Roman rhetorician Cicero had already described this landscape southeast of Rome as “neither pleasant nor healthy.” This had hardly changed in two thousand years. The swampland was still the habitat of the anopheles mosquito and the dominion of the “Goddess of Fever.”⁴⁷

In Italian fascism, malaria seemed to be a flaw of a primal, feminine, sterile nature, whose unproductive development was to be prevented through the use of technology and science, chemistry, and propaganda, turning it into a second state of nature: “The mosquito was taken by the fascists to exemplify the evil character of pre-fascist nature in the marshes.” The efforts to create “an idyllic rural area consonant with fascist ideals of productivity and activity within the state’s interests”⁴⁸ included extensive electrification of the region, constructing thousands of kilometres of roads and canals and “large pumping and drainage plants called *impianti idrovori* (drainage pumping stations), in Italian literally ‘water-eating’ machinery plants,” founding an anti-malaria institute, having war veterans plant the region with water-absorbing eucalyptus trees (these plants performed their job too well, which is why they were later torn out again at great expense – as a consequence, there are about four tornadoes annually in this area), stocking fish to eat mosquito larvae, establishing an anti-mosquito militia, and putting up children’s camps whose buildings were wrapped in ten layers of wire to protect them from mosquitoes. “The fascist emphasis on the technical and technological aspects of the land reclamation programme were also characteristic of a positivistic view of science and geographical knowledge, aimed at controlling, rationalizing and ultimately creating an imperium over a previously unknown or ‘untamed’ area.”⁴⁹

Toxic Progress

At the same time in the Pacific, in spite of all countermeasures, malaria was inflicting more fatalities on the Allies than the Japanese forces were. But the discovery of a potent molecule brought new momentum to the anti-malaria campaigns: “From the perspective of medical entomology, the most exciting outcome of World War II was the discovery of DDT.”⁵⁰

Dichloro-diphenyl-trichlorethane had already been synthesized in Germany in the 1870s, but it was only in the last years of the war that people became aware of a special quality of

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DDT. The molecule not only killed mosquito larvae in water, but even months after a surface had been treated with it, it was still lethal to any mosquito that landed on it.

Once again, the Rockefeller Foundation became active, and together with the World Health Organization, the US Agency for International Development, and the UN, it launched the Global Malaria Eradication Program, which coordinated the worldwide deployment of DDT in the 1950s and 1960s, with the goal of eliminating malaria. This deadly substance became part of a postwar order that organized war and agriculture as affiliated fields: “Tractors and tanks developed side by side. Synthetic nitrogen fertilizers were manufactured cheaply in ammonia plants built mainly to produce nitrate explosives. Modern organic insecticides emerged from gas weapon research between the wars, while aerial spraying owes much to air combat methods and technology initially developed during World War I.”⁵¹

In the Global Malaria Eradication Program, health and chemistry became essential parts of a technocratic vision of modernity that lined up cold warriors and warm habitats on the battlefield. In the context of decolonization movements and nation-building after World War II, the female mosquito was declared an enemy of the state: in Peronist Argentina, a state of emergency was declared in the fight against mosquitoes in order to use violent police enforcement to fog even the last slum hut with DDT.⁵² And probably the first international act of the Egyptian president Nasser, who had just come to power in 1952, was to sign an agreement with the WHO and UNICEF to establish a DDT factory near Kafr Zayat “that would produce two hundred tons a year of finished DDT.”⁵³

The staging of nation-building and anti-malaria campaigns often had militaristic features: in 1955, a large Indian newspaper reported that the Ahmedabad Corporation had sprayed seven thousand tenements in working-class neighborhoods with DDT on the occasion of World Health Week. In Shillong, in northeastern India, and in southern Hyderabad, mass demonstrations were organized by doctors and nurses who carried posters reading “Lead Healthy Lives and Keep Your Surroundings Clean.” Meanwhile, two aircraft from the Indian Air Force rained health brochures down on the population in Hyderabad and Secunderabad – only seven years after Hyderabad had been forcibly incorporated into the new Indian state. This was both a promise of future health and a powerful assurance that come what may, it would happen in the state that had been established.⁵⁴

At the same time, there were increasing

reports about the disastrous effects of the global field trials of chemical insecticides. In hindsight, the military policy of eradication turned out not only to be futile and counterproductive (the absolute and relative number of malaria infections is globally higher than before the start of the eradication campaign), but with the publication of Rachel Carson’s *Silent Spring* (1962), which portrayed the effects of the poison on bird populations, it also promoted the emergence of the ecological movement in the West and led to the banning of DDT in the United States. For in spite of initial successes, DDT-resistant mosquitoes quickly developed, first in Sardinia, and then in Greece, where DDT had been widely used. In the 1960s and 1970s, malaria reappeared in many places and the idea that malaria could be eliminated was postponed to some distant future.

“Since the 1990s the post-eradication era has been interpreted as a time of total confusion, even of anarchy,”⁵⁵ since opinions on what, if anything, might be learned from this period differ widely. According to the anthropologist David Turnbull, a major reason for this confusion lies in the fact that malaria is a case of *motley*, a patchwork or crazy-quilt, a term historically used to describe the piebald costumes of jesters or “motley fools.” To think of malaria as a “motley” means to understand this phenomenon as “a ragbag of different strains of the parasite and of interacting processes”⁵⁶ – not as a disease that can be attributed to the mere presence of a foreign species in the human body.

Turnbull enumerates various conceptualizations of malaria during the twentieth century: malaria was seen as a political, administrative, social, technical, economic, or ecological problem, whereas in Papua New Guinea, coastal dwellers reserved the Tok Pisin expression “samting nating” (something nothing) for it, and malariologists in the United States, all attempts at producing a vaccine failed, declared in tautological exasperation that malaria is anything that reacts to anti-malarial drugs.⁵⁷

What exactly reacts to anti-malarial drugs remains indefinite and potentially dangerous, but this doesn’t keep armies or pharmaceutical companies from repeatedly promising and administering “safe” preventive drugs. In 2002 there were reports of rampages by four American war veterans who had just returned home to North Carolina from Afghanistan and each independently murdered their wives (one of them had seventy-one knife wounds). All four of them had taken Lariam (mefloquine) to prevent malaria. Lariam was developed jointly by the Walter Reed Army Institute of Research (WRAIR), the US Army, and the pharmaceutical company F.

Hoffmann-La Roche AG. Lariam – it is not known exactly how it works – and is associated with severe neuropsychiatric disorders including manic behavior, acute psychosis with delusions, and aggressive mood swings, and so suspicion quickly fell on the drug.⁵⁸ Diane Nelson points out that an official army report cleared the drug of any suspicion just in time for it to be distributed to 200,000 soldiers in Iraq: “Little mention was made of military training itself as a lethal drug or of the way that soldiers’ willingness to die has made them excellent guinea pigs in military laboratories, where unapproved drugs are routinely tested.”⁵⁹

Imperial, Colonial, National, NGO

The history of the struggle against the female mosquito reads like the history of capitalism in the twentieth century: after imperial, colonial, and nationalistic periods of combatting mosquitoes, we are now in the NGO phase, characterized by shrinking government health care budgets, privatization through structural adjustment programs, and intensified activity on the part of non-governmental organizations and development agencies. The Rockefeller Foundation was once again at the forefront when in 2018 the Bill & Melinda Gates Foundation declared it was investing \$3.4 million in the development of genetically modified male mosquitoes. When they are released in large numbers, all their offspring will die after one mating – at least that’s the plan. Mosquitoes don’t transmit malaria anymore, they are turned into agents of health: “GM mosquitoes render the mosquitoes themselves as a commercial product; a commercial product in a political economy funded by philanthropic initiatives, shaped by private university spin-offs and characterized through economic inequalities.”⁶⁰

It is still unclear what consequences this new strategy of releasing insectoid reproduction bombs will have, but the effects of the latest global campaign of the NGO phase are already making themselves felt. Charitable initiatives committed to the free distribution of insecticide-impregnated mosquito nets have led to an economic redistribution from local producers of traditional mosquito nets to industrial sites in Vietnam and Thailand that are capable of producing huge quantities of insecticide-treated nets.⁶¹

A study of the effects of these modern mosquito nets in Ghana shows that after an initial improvement, the situation could get considerably worse: the main effect of the impregnated nets is not keeping mosquitoes away from people (traditional nets could do this just as well), but that contact with the net is fatal to the mosquitoes, and also that mosquitoes are

deterred from getting near the net, since the chemicals have a repellent effect. In other words: the impregnation with insecticide produces a second biochemical net that is greater than the textile net itself. This results in an immense pressure to adapt: first, normal mosquitoes die in great numbers or are kept from moving near the nets. Within the mosquito population, however, more and more subpopulations emerge that react with altered behavior: largely avoiding interior spaces and swarming out earlier, which means that even non-impregnated nets lose their effectiveness and the number of infections increasingly grows higher than before the distribution of the free nets.

For the anthropologist Uli Beisel, the recalcitrance of mosquitoes toward the charitable efforts to control them shows on the one hand in the mosquitoes’ altered behavior described above, and on the other hand physically, in the form of the mosquitoes’ increasing tolerance for insecticides. The latter occurs first through mutations in precisely those parts of the insects’ nervous systems that are targeted by the toxins, and secondly through metabolic changes that render the toxins harmless before they reach their target, and thirdly by the adaptation of the mosquito’s cuticle, through which the toxin is absorbed. Chemical similarities between the indoor anti-mosquito toxins (nets and aerosols) and those used in agriculture lead to cross-immunizations that reinforce the new resistance.⁶²

If animals in modernity functioned as the other to humans (nature, instinct, wildness, lack of speech, lack of history, lack of a soul, and so on), insects are the other to animals.⁶³ Insects seem to possess no form of individuality; they don’t even have a face from which we could read expressions of inner life. Declaring humans to be insects is therefore the most radical form of dehumanization.

In Western modernity, dealing with unpleasant and potentially deadly insects has usually taken on the form of a military confrontation bent on annihilation. Uli Beisel’s proposal for a ceasefire therefore seems provocative: “What if managing mosquitoes is not about how to best eliminate them, but about asking how we might find ways to tolerate coexisting with each other?”⁶⁴

The Hamburg Termites

Whereas the battle against mosquitoes was part of colonial expansion strategies, in the twentieth century another insect set out to colonize the colonizers themselves. We are talking about the termite, whose conquest of a northern German city also shook certainties about which animal

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belongs where.

In the eighteenth century, when Africa was being mapped and explored by an army of scientists, the colonialists were forced to realize – what a surprise! – that Africa had already been colonized: by white ants, as termites were originally called. Later, legions of ethnographic photographs showed seemingly “primitive” people and their huts next to the elaborate architecture of these other Africans, which by comparison resembled high-rises of unimaginable heights, leaving European engineers in a state of perplexed envy.⁶⁵

It was probably shortly after the German Empire had carried out a campaign of racist collective punishment against the Herero and Nama peoples in the colony of German southwest Africa (today Namibia) in the early twentieth century that the colonizers were colonized by termites.⁶⁶

The “destructive, wood-munching creatures”⁶⁷ had likely made it to Hamburg with imported wood that was used for the cladding of the city’s new heating system. The termites would probably not have survived a single winter in the cold climate of northern Europe, but luckily for them, in 1921 the local electric company had begun to channel waste heat from the generation of electricity through a pipe system to government offices and homes.⁶⁸ The implementation of a district heating grid under the city also offered the termites a solution to the problem of the cold northern European climate: “The barely insulated pipes warmed the earth, the wood was delicious – all was well with the termites.”⁶⁹

The other problem – that the wood was too dry for the termites’ purposes – was solved by the animals themselves: they constructed mud tubes in the ground. This supplied the colony with the moisture necessary to keep their thin skins and soft bodies from drying out. With thousands of hungry mouths, the termite colony henceforth chewed its way through subterranean Hamburg and crisscrossed open spaces in protective tunnels.

In all probability, the termites were living in a thriving colony when they were discovered in 1937. A construction worker had put his jacket on a pile of wood near the entrance to the district heating network – only to watch as the pile turned into a heap of sawdust.

The heating ducts were not only an ideal winter home for the termites, they also served as underground guide rails for the colonization of the city: the termites followed the duct grid and worked their way up to the trees of the Karolinenviertel district (“Karovierteil”) and the Justice Forum, where they still live to this day.

While the Karovierteil was being overrun by a

congenial army of creative types from above, becoming a trendy residential neighborhood with all the well-known problems of gentrification, simultaneously the venerable Justice Forum (consisting of the Higher Regional Court, and the Criminal Justice and Civil Justice buildings) was being attacked from below. One city official reports that the worst nightmare of all property owners became reality when civil servants discovered that termites had started to devour the state registry records – thousands of tiny Bakunins.⁷⁰

It had been the strategic goal of all Bakunin-style anarchist revolts of the 1800s to destroy as many local records of deed registries and bank liabilities as possible before normal class rule could be restored. Ironically, a contemporary anti-termite poison is being marketed by BASF under the brand name Termidor, which unintentionally draws a connection to Leon Trotsky’s coinage of the term “Thermidor” to refer to the counterrevolutionary phase of the bureaucratic restoration of power.⁷¹ In the corporate newspeak presented on the Termidor company website, control means killing, design is extermination, and lifetime is a registered trademark: “For the best termite control solution, turn to Termidor® ... as seen on Designing Spaces on Lifetime®.”⁷²

The files were quickly relocated, but even after a series of countermeasures over the past ninety years, including the subterranean installation of glass barricades and the massive deployment of heat to dry them out, the termites are still a problem. Even the removal of entire houses and experimental hormone therapy by a research unit of the German armed forces did little to help.⁷³

Old tactics like the mass poisoning of entire districts with highly toxic substances and the introduction of all kinds of insecticides into bricks and wood were common into the 1980s, but the latest weapon is intelligent poisoning by means of “homeopathic doses” of lethal substances – in concentrations low enough to be carried back to the colony and fed to the other termites, so that the poison can accumulate over time and unleash its effect. According to official estimates, in certain parts of the city ninety-five percent of Hamburg’s termite population was killed; but in the meantime, new areas have been colonized. Children are warned in German teaching materials: “Success is always in danger: sometimes the termites don’t like the taste of the bait, sometimes a termite-free zone is re-infested.”⁷⁴

Nationalist Echoes of the Habitat

Even though the termites have certainly cost the city and its homeowners a considerable sum of

money, termite species have only recently been scientifically defined as “invasive,” with only twenty-seven of 2,750 described termite species falling into this category, and trade in goods is the single most important factor in their spread.⁷⁵ The invasiveness of biological species only seems obvious; in fact, it not easy to observe. Moreover, the research field of invasion ecology was not established until 1958, and it has the reputation of being especially “jargon-rich.”⁷⁶ This means that the terms used are often not precisely defined or generally accepted.

The historically controversial problem of invasiveness is closely bound up with the concept of habitat. But what is a habitat? “Habitat” describes a spatial unity between individuals and species: the space that a particular population needs to be able to reproduce. The term was first used in Carl von Linné’s *Systema Naturae* (1758). But whereas the Latin word *habitat* simply means “he/she/it lives” or “he/she/it dwells” and was originally used as a verb, and thus for an activity, the term later ossified and took on the meaning of a specific spatial territory. In this new form, it could then be pervaded or conquered by “alien, adventive, exotic, foreign, non-indigenous, non-native and novel”⁷⁷ organisms. Habitat became a concept reminiscent of the idea of nations with fixed, stable, and controlled borders.

Precisely the seemingly innocent question of where which animal lives and should live cannot be separated from farther-reaching discourses of political history within which these questions are asked and answered. Science studies scholar Donna Haraway investigated the history of ideas of the immune system in the Cold War era.⁷⁸ The parallels between the conceptualization of microscopic and geopolitical models and metaphors are striking. The scientific ideas of the immune system seem to have been lifted from a NATO mission statement: the now passionately pursued definition of inside and outside seems to be as much a part of the self-protection of bodies and associations of states as does the identification and disarming of external infiltrators and internal sources of danger (like sleeper cells) that could mutate at any time from a harmless twilight state into a life-threatening proliferation. Similarly, the rhetoric of natural habitats and invasive species recalls the exiled revolutionary and cultural theorist Leon Trotsky’s lament about the “planet without a visa,”⁷⁹ a dubious human privilege that is extended to the non-human world.

The dedicated efforts against the Hamburg termites cannot be reduced to purely rational discourses or practices. The problem with Hamburg’s termites is that they also invade our

dreams.

In his *Insectopedia* (2010), Hugh Raffles remarks that “insects are without number and without end” and the nightmares that they inhabit seem to be as numerous as the insects themselves. There are nightmares of “fertility” and of the “crowd,” of “uncontrolled bodies,” of “unguarded openings” and “vulnerable places,” of “foreign bodies in our bloodstream” and of “foreign bodies in our ears and our eyes and under the surface of our skin.” Let us not forget the “nightmare of swarming and the nightmare of crawling,” the “nightmare of beings without reason and the nightmare of the inability to communicate,” as well as the nightmare of “not seeing the face,” and “not having a face”; it is the nightmare “of being overrun,” of “being occupied,” and of “being alone,” of “putting on shoes” and “taking off shoes,” the nightmare of “the grotesque,” of the “snarled hair” and “the open mouth,” the nightmare of “randomness and the unguarded moment,” the nightmare

of the military that funds nearly all basic research in insect science, the nightmare of probes into brains and razors into eyes, the nightmare that should any of this reveal the secrets of locusts swarming, of bees navigating, or of ants foraging, the secrets will beget other secrets, the nightmares other nightmares, the pupae other pupae, insects born of microimplants; part-machine, part-insect insects; remote-controlled weaponized surveillance insects; moths on a mission; beetles undercover; not to mention robotic insects, mass-produced, mass-deployed, mass-suicide nightmare insects. These are the nightmares that dream of coming wars ... dreams of Osama bin Laden somewhere in a cave.⁸⁰

As real, symbolic, and affective agents, the Hamburg termites cause discomfort that is like a “cloud shaped like a sword” stuck in the heart of the city. If mosquitoes *speak* through the social noise they make, as Timothy Mitchell argues in his analysis of malaria outbreaks in colonial Egypt,⁸¹ and if tsetse flies *scream*, as Clapperton Mavhunga states in connection with the human and non-human entanglements in Zimbabwe’s Gonarezhou National Park⁸² – then the Hamburg termites *make bambule* (go on a rampage).⁸³

Political Salvation in the Termite Gut

When the termites arrived in Hamburg, the discourse around the insect had already morphed from admiration to disgust. Research had shown that termites have two stomachs – one of them being a social stomach that was

emptied for other termites in the colonies. Termites that had died were also consumed. On top of that, every fellow member of the species in the colony that asked for it was given excrement to redigest. The termite colony didn't waste anything: "From behind and in front, the food continues to flow through the whole state, the returnee gives it to the one that stays at home, the old give it to the young, in an endless cycle of soup, even if the soup may be a little strange."⁸⁴ While nowadays research projects compete in learning from the sophisticated air conditioning systems of termite hills, a look inside the working of the colony offers a glimpse into the nightmare of total recycling.

The Belgian Nobel Prize winner and essayist Maurice Maeterlinck vividly described this astounding social metabolism in his *Life of the Termites* (1926): "You see, this is perfect communism, communism of the pharynx and intestines, driven by the collectivism of shit-eating. Nothing is lost in this dreary and thriving republic, where the dirty ideal that nature seems to offer us is made real in economic terms."⁸⁵

The forestry scientist and zoologist Karl Escherich, a staunch National Socialist, picked up this thread in his inaugural address as the newly appointed rector of the University of Munich in 1933. His speech, titled "Termite Delusion," contrasted the supposedly good ant colony of the Third Reich with the diabolical termite system of the Soviet Union.⁸⁶

In the same year in which Escherich gave his inaugural speech, another biologist, Jean L. Sutherland, published an article describing a disturbing microorganism that lived in the rectum of the Australian termite species *Mastotermes darwiniensis*.⁸⁷ Sutherland called the tiny animal *Mixotricha paradoxa*, which means "strange creature with tousled hair." While Escherich's demonization of termites because of their intestinal tract is now only of historical interest, Sutherland's discovery has been enjoying renewed attention in the past few years. The remarkable thing about *M. paradoxa* is its constitution as an organism combining four other creatures that live in and on it.

You have to picture *M. paradoxa* as a sort of hairy pear with several antennae sticking out of its head – the hair and the antennae each possess their own genome, while inside the cells of *M. paradoxa* there are two further distinct genomes. Therefore *M. paradoxa* does not have one genome, but a total of five.

Donna Haraway summarizes what it means to understand the micro-organism as a living metaphor:

This little filamentous creature makes a mockery of the notion of the bounded,

defended, singular self out to protect its genetic investments.... What constitutes *M. paradoxa*? Where does the protist stop and somebody else start in that insect's teeming hindgut? And what does this paradoxical individuality tell us about beginnings? Finally, how might such forms of life help us imagine a usable language?⁸⁸

Is *Mixotricha paradoxa* one living being, five, or 250,000? Did it start off alone and then assimilate the other beings, or was it the one that was colonized? What was it before it became many, or vice versa: What were they before they became one? In times when social questions are being increasingly racialized and culturalized, "this tiny organism engenders key questions about the autonomy of identity," according to Myra Hird.⁸⁹ Of course, there is the danger of a "biological exuberance," of trying to discern too much subversive potential in "nature's rainbow,"⁹⁰ but there may still be something to learn here. Microorganisms also account for at least half of the number of all cells in the human body. In the documentary *Golden Genes* (Konrad/Hansbauer/Stachel, 2016), the microbiologist Christa Schleper explains: "In terms of biomass, that makes up about one and a half kilograms.... Then the question naturally arises: What is the human? Is that *Homo sapiens* plus many bacteria? That's why people like to say that we are some kind of super organism."

Following Haraway, in the play *Das purpurne Muttermal* (The Purple Birthmark, 2006), the German dramatist René Pollesch urges us to look for new answers to problems of nationalism and identity politics in the termite piles of the world, when old answers seem to work less and less.⁹¹ But maybe everything is even more political than we ever thought. We could be unknowingly celebrating microscopic slave labor, as philosopher and author Rupert Glasgow makes us aware:

Consider the case of the large protozoan *Mixotricha paradoxa*, which is propelled through its environment by the coordinated undulation of what appear to be thousands of "cilia" or hair-like appendages; these appendages have been shown to be hundreds of thousands of tiny spirochaete bacteria, which – like "galley slaves" – are held in place at the cell surface by yet other bacteria.⁹²

Bees, mosquitoes, and termites were not only a part of historical and contemporary notions of space, but also instruments of political practice related to spaces. As a part of the colonization of the territory that is now the United States, the

honeybee was an invasive species; thanks to the global movement of goods, the termite has recently become one in Germany as well. Mosquitoes, on the other hand, are so closely associated with particular spaces that they almost seem to be a trait of these spaces. Ideas of desired and detested naturalness are embedded in all these spatial ideas and practices. But these historically evolved ideas obstruct our view of other ecologies that surround us.

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Excerpted from Fahim Amir, *Being and Swine: The End of Nature (As We Knew It)*, trans. Geoffrey C. Howes and Corvin Russell (Between the Lines, 2020).

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1 Paul F. Russell, *Man's Mastery of Malaria* (Oxford University Press, 1955), 244, citing David Turnbull, *Masons, Tricksters, and Cartographers: Comparative Studies in the Sociology of Scientific and Indigenous Knowledge* (Routledge, 2000), 182n13.

2 Mary Kosut and Lisa Jean Moore, "Urban Api-Ethnography: The Matter of Relations between Humans and Honeybees," in *Mattering: Feminism, Science, and Materialism*, ed. Victoria Pitts-Taylor (New York University Press, 2016), 245–57, 246.

3 Kosut and Moore, "Urban Api-Ethnography," 246. Hegemonic images are always unstable. Although even the behavior of bees is predictable, it is not completely so, as the case of so-called Africanized killer bees shows: escaped from a Brazilian breeding experiment in 1957, which had crossed the European honeybee with African honeybees, many feral swarms developed, ultimately crossing the US border in 1990, where, because of their "mobility and aggressiveness" as well as their "unwillingness to settle into working-class stability," they were considered "threats to the order and efficiency of production." Anna L. Tsing, "Empowering Nature, or: Some Gleanings in Bee Culture," in *Naturalizing Power: Essays in Feminist Cultural Analysis*, ed. S. Yanagisako and C. Delaney (Routledge, 1995), 113–43, 135.

4 See also: Juan Antonio Ramírez, *The Beehive Metaphor: From Gaudí to Le Corbusier* (Reaktion, 2000), 25–35.

5 Horn, *Bees in America*, 19–64.

6 Jens Martin Gurr, "The Mass-Slaughter of Native Americans in Jim Jarmusch's *Dead Man*: A Complex Interplay of Word and Image," in *Word & Image in Colonial and Postcolonial Literatures and Cultures*, ed. Michael Meyer, Gesellschaft für die Neuen Englischsprachigen Literaturen (Brill Academic Publishers, 2009), 354–71, 355.

7 The use of biological weapons, like bees and other insects, is neither exclusive to the US nor anything really new; see Jeffery Lockwood, *Six-Legged Soldiers: Using Insects as Weapons of War* (Oxford University Press, 2008).

8 Jake Kosek, "Ecologies of the Empire: On the New Uses of the Honeybee," *Cultural Anthropology* 25 no. 4 (2010), 650–78, 656.

9 Jake Kosek, "New Uses of the Honeybee," in *Global Political*

Ecology, ed. Richard Peet, Paul Robbins, and Michael Watts (Routledge, 2011), 227–51.

10 Lisa Jean Moore and Mary Kosut, *Buzz: Urban Beekeeping and the Power of the Bee* (York University Press, 2013), 138.

11 Jay Bybee, "Memorandum for John Rizzo, Acting General Counsel of the Central Intelligence Agency," U.S. Department of Justice, Office of Legal Counsel, August 1, 2009, 1–18, 2 □.

12 Bybee, "Memorandum for John Rizzo," 3.

13 See also: Neel Ahuja, "Abu Zubaydah and the Caterpillar," *Social Text* 29, no. 1 (2011), 127–49, 128.

14 Ahuja, "Abu Zubaydah and the Caterpillar," 129.

15 Ahuja, "Abu Zubaydah and the Caterpillar," 134.

16 Ahuja, "Abu Zubaydah and the Caterpillar," 133. See also Jasbir K. Puar and Amit S. Rai, "Monster, Terrorist, Fag: The War on Terrorism and the Production of Docile Patriots," *Social Text*, no. 72 (2002), 117–48.

17 John Robert McNeill, *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620–1914* (Cambridge, MA: Cambridge University Press, 2010).

18 Diane M. Nelson, "A Social Science Fiction of Fevers, Delirium, and Discovery: The Calcutta Chromosome, the Colonial Laboratory, and the Postcolonial New Human," *Science Fiction Studies* 30, no. 2 (2003), 246–66, 260.

19 Nelson, "A Social Science Fiction," 260f.

20 Bruno Latour, *The Pasteurization of France* (Harvard University Press, 1988), 141.

21 Nelson, "A Social Science Fiction," 247.

22 Jeanne Guillemin: "Choosing Scientific Patrimony: Sir Ronald Ross, Alphonse Laveran, and the Mosquito-Vector Hypothesis for Malaria," *Journal of the History of Medicine and Allied Sciences* 57,4 (2002), 385–409.

23 Margaret Lock and Vinh-Kim Nguyen, *An Anthropology of Biomedicine* (Wiley-Blackwell, 2010), 179.

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24 Lock and Vinh-Kim Nguyen, *Anthropology of Biomedicine*, 43f. William B. Cohen sees this critically, at least with regard to French expansion politics.

According to Cohen, it was not so much medical knowledge from tropical medicine, which soldiers in battle were often skeptical of, and whose prescriptions, like the taking of quinine, were often only half-heartedly followed, but rather, contrariwise, the political and social stabilization of French colonial areas made possible the increased recruiting of local troops and the construction of mosquito-unfriendly military architecture (buildings made of clay, brick, and stone, instead of tents), which in turn at first led to lower losses due to malaria. William B. Cohen, "Malaria and French Imperialism," *Journal of African History*, no. 24 (1983), 23–36.

25 Emma Umana Clasberry, *Culture of Names in Africa: A Search for Cultural Identity* (Xlibris Corp, 2012), 54.

26 Clasberry, *Culture of Names in Africa*. See also Helen Callaway, *Gender, Culture and Empire: European Women in Colonial Nigeria* (Macmillan, 1987), 65ff.

27 Ambe J. Njoh points to the aspect of ideological division, since the segregated part of the local population was ascribed the status of "health threat," while to the other part, who as servants were allowed to live in the healthy, European zones, this could appear as personal gratification and inclusive appreciation. Cf. Ambe J. Njoh, "Urban Planning as a Tool of Power and Social Control in Colonial Africa," *Planning Perspectives* 24, no. 3 (2009), 301–317, 303.

28 Philip D. Curtin, "Medical Knowledge and Urban Planning in Tropical Africa," *American Historical Review* 90, no. 3 (1985), 594–613, 602.

29 Jonathan Roberts, "*Korle and the Mosquito*: Histories and Memories of the Antimalaria Campaign, Accra, 1942–45," *Journal of African History*, no. 51 (2010), 343–365, 348.

30 Roberts explains: "Though there is no record of outright resistance by the migrant workers hired as human bait, it appears that they took measures to preserve their dignity, and, especially, to avoid mosquito bites." "*Korle and the Mosquito*," 358.

31 Roberts, "*Korle and the Mosquito*," 355.

32

Harriet Deacon, "Racial Segregation and Medical Discourse in Nineteenth-Century Cape Town," *Journal of Southern African Studies* 22, no. 2 (1996), 287–308.

33 Carl H. Nightingale, *Segregation: A Global History of Divided Cities* (University of Chicago Press, 2015), 176.

34 See also: Curtin, "Medical Knowledge and Urban Planning in Tropical Africa"; Njoh, "Urban Planning as a Tool of Power and Social Control in Colonial Africa."

35 Cited in John W. Cell, "Anglo-Indian Medical Theory and the Origins of Segregation in West Africa," *American Historical Review* 91, no. 2 (1986), 307–335, 308.

36 Cell, "Anglo-Indian Medical Theory and the Origins of Segregation," 332.

37 See also: Paul S. Sutter, "Nature's Agents or Agents of Empire? Entomological Workers and Environmental Change During the Construction of the Panama Canal," *Isis* 98, no. 4 (2007), 724–54; Maria Kaika, "Dams as Symbols of Modernization: The Urbanization of Nature Between Geographical Imagination and Materiality," *Annals of the Association of American Geographers* 96, no. 2 (2006), 276–301.

38 Sutter, "Nature's Agents or Agents of Empire?," 725.

39 Mitchell, *Rule of Experts*, 19–53, 26.

40 At that time, the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease had just finished its successful campaign against a hookworm species called *Necator americanus* (Latin for "American killer") in eleven southern American states, which lasted from 1909 to 1915, and became part of the Rockefeller Foundation International Health Division. The connection between poverty, race, and infections by the murderous hookworm played an important role in the formation of cultural perception and self-image of those affected. See also: Matt Wray, *Not Quite White: White Trash and the Boundaries of Whiteness* (Duke University Press, 2006), 96–132.

41 Wray, *Not Quite White*, 96.

42 Ricardo Salvatore, "Imperial Mechanics: South America's Hemispheric Integration in the Machine Age," *American Quarterly* 58,3 (2006), 663–91,

663f.

43
Neel Ahuja, *Bioinsecurities: Disease Interventions, Empire, and the Government of Species* (Duke University Press, 2016), 19.

44
Ahuja, *Bioinsecurities*, 77.

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Ahuja, *Bioinsecurities*, 73. For a discussion of the US Army's cinematic warfare against the anopheles mosquito in the 1940s, which was here portrayed as the second main war enemy and turned into a "placeholder for warnings about alcoholism, homosexuality, loose morals, sexually transmitted diseases and the fear (or desire) of sexual penetration," see Gudrun Löhner, "Anopheles Anni vs. Malaria Mike," in *Tiere im Film. Eine Menschheitsgeschichte der Moderne*, ed. Maren Möhring, Massimo Perinelli, and Olaf Stieglitz (Böhlau, 2009), 193–205, 194.

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Ahuja, *Bioinsecurities*, 99; see also 216n13.

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Federico Caprotti, "Malaria and Technological Networks: Medical Geography in the Pontine Marshes, Italy, in the 1930s," *Geographical Journal* 172, no. 2 (2006), 145–55, 147.

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Caprotti, "Malaria and Technological Networks," 149f.

49
Caprotti, "Malaria and Technological Networks." 153.

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Leo Barney Slater and Margaret Humphreys, "Parasites and Progress: Ethical Decision-Making and the Santee-Cooper Malaria Study, 1944–1949," *Perspectives in Biology and Medicine* 51, no. 1 (2008), 103–120, 107.

51
Nicolas Rasmussen, "Plant Hormones in War and Peace: Science, Industry, and Government in the Development of Herbicides in 1940s America," *Isis* 92, no. 2 (2001), 291–316, 292.

52
Eric D. Carter, "'God Bless General Perón': DDT and the Endgame of Malaria Eradication in Argentina in the 1940s," *Journal of the History of Medicine and Allied Sciences* 64, no. 1 (2008), 78–122.

53
Mitchell, *Rule of Experts*, 50.

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Sunil S. Amrith, *Decolonizing International Health: India and Southeast Asia, 1930–65* (New York: Palgrave Macmillan, 2006), 104.

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Alfons Labisch, "Species Sanitation of Malaria in the Netherlands East Indies (1913–1942): An Example of Applied Medical History?," *Michael Quarterly*, no. 7 (2010), 296–306, 298.

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David Turnbull, *Masons, Tricksters, and Cartographers: Comparative Studies in the Sociology of Scientific and Indigenous Knowledge* (Routledge, 2000), 165–94, 166.

57
Turnbull, *Masons, Tricksters, and Cartographers*, 168.

58
Catherine Lutz and Jon Elliston, "Domestic Terror," *The Nation*, October 14, 2002, 14–16.

59
Nelson, "A Social Science Fiction," 263n6.

60
Uli Beisel and Christophe Boëte, "The Flying Public Health Tool: Genetically Modified Mosquitoes and Malaria Control," *Science as Culture* 22, no. 1 (2013), 38–60, 58. This is a bioeconomic cake that emerging markets like Brazil also want a piece of. See also: Luisa Reis-Castro and Kim Hendrickx, "Winged Promises: Exploring the Discourse on Transgenic Mosquitoes in Brazil," *Technology in Society* 35 (2013), 118–28.

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Uli Beisel, "Markets and Mutations: Mosquito Nets and the Politics of Disentanglement in Global Health," *Geoforum*, no. 66 (2016), 145–55, 145.

62
Beisel, "Markets and Mutations," 150.

63
See also Kosek, "Ecologies of the Empire," 653.

64
Beisel, "Markets and Mutations," 153.

65
Eva Johach, "Termitewerden: Staatenbildende Insekten im Industriezeitalter," *Kultur & Gespenster* 4 (2007), 20–37, 21. See also: Douglas Starr and Felix Driver, "Imagining the Tropical Colony: Henry Smeathman and the Termites of Sierra Leone," in *Tropical Visions in an Age of Empire*, ed. Felix Driver and Luciana Martins (University of Chicago Press, 2005), 92–112.

66
It was long assumed that it was *Reticulitermes flavipes* (Kollar), the most widespread termite of North America. Current research suggests another conclusion: the Hamburg termite population seems to consist of the southern European "cousins": *Reticulitermes lucifugus*. See Udo Sellenschlo, *Vorratsschädlinge und*

Hausungeziefer: Bestimmungstabellen für Mitteleuropa (Springer Verlag, 2010), 49.

67
Nel Yomtov, *From Termite Den to Office Building* (Cherry Lake Publishing, 2014), 10.

68
According to Abraham Margolis, the chief engineer of the enterprise, the driving force for the project was the high cost of fuel after World War I. But Margolis himself saw much more in electrical heating: social-political, hygienic, medical, and ecological aspects. After he was driven out of the corporation's management by the National Socialists in the 1930s, Margolis settled in the United Kingdom and continued his work with another company, which would bring district heating to Pimlico, a London residential area. Wolfgang Mock, "Margolis, Abraham," *Neue Deutsche Biographie* 16, 1990, 169f. See also: Charlotte Johnson, "District Heating as Heterotopia: Tracing the Social Contract through Domestic Energy Infrastructure in Pimlico," *Economic Anthropology* 3, no. 1 (2016), 94–105.

69
"Karviertel, Termiten-Attacke," *Hamburger Morgenpost*, February 9, 2009.

70
According to expert interviews with various municipal officials in April and May 2013 (together with the architect and researcher Christina Linorter).

71
Thermidor was the eleventh month of the French revolutionary calendar, which lasted from the middle of July to the middle of August and literally means "the month of heat." Maximilien de Robespierre was toppled in this month of the year 1794.

72
<http://www.termidorhome.com/>.

73
According to expert interviews with various municipal officials in April and May 2013 (together with Christina Linorter).

74
Silke Klöver, *Was hat die Globalisierung mit uns zu tun? Grundwissen erwerben – Zusammenhänge erkennen* (Persen Verlag, 2011), 21.

75
Theodore A. Evans, Brian T. Forschler, and Grace J. Kenneth, "Biology of Invasive Termites: A Worldwide Review," *Annual Review Entomology*, no. 58 (2012), 455–74, 457.

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Theodore A. Evans, "Invasive Termites," in *Biology of Termites: A Modern Synthesis*, ed. David Edward Bignell, Yves Roisin, and

Nathan Lo (Springer, 2011), 519–62, 520.

77
Evans, "Invasive Termites," 521.

78
Donna Haraway, "The Biopolitics of Postmodern Bodies: 'Constitutions of Self in Immune System Discourse,'" in *Simians, Cyborgs, and Women: The Reinvention of Nature* (Routledge, 1991), 203–230.

79
The paragraph from the chapter "The Planet without a Visa" in Trotsky's autobiography, *My Life*, reminds us (living in the times of whistleblower Edward Snowden and Sci-Hub founder Alexandra Elbakyan) of the continuities between his and our epoch: "I must admit that the roll-call of the western European democracies on the question of the right of asylum has given me, aside from other things, more than a few merry minutes. At times, it seemed as if I were attending a 'pan-European' performance of a one-act comedy on the theme of principles of democracy. Its text might have been written by Bernard Shaw if the Fabian fluid that runs in his veins had been strengthened by even so much as five percent of Jonathan Swift's blood. But whoever may have written the text, the play remains very instructive: *Europe without a Visa*. There is no need to mention America. The United States is not only the strongest, but also the most terrified country. Hoover recently explained his passion for fishing by pointing out the democratic nature of this pastime. If this be so – although I doubt it – it is at all events one of the few survivals of democracy still existing in the United States. There the right of asylum has been absent for a long time. *Europe and America without a visa*. But these two continents own the other three. This means – *The planet without a visa*." Leon Trotsky, *My Life* (Grosset & Dunlap, 1960 (1930)), 579.

80
Hugh Raffles, *Insectopedia* (Pantheon, 2010), 469–73.

81
Mitchell, *Rule of Experts*.

82
Clapperton Changanetsa Mavhunga, *The Mobile Workshop: Mobility, Technology, and Human-Animal Interaction in Gonarezhou (National Park), 1850–Present*, dissertation, University of Michigan, 2008, 7.

83
Bambule was the name of a countercultural trailer park of squatters in the aforesaid Karviertel, where the Hamburg termites also live. Massive protests against the police clearing of the alternative living project became the subject of international press coverage. While *Bambule machen* (making

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bambule) is a northern German slang expression for rioting and rampaging, *bamboula* goes back to the name for a big drum and the dance that accompanied this drum – both had their origin in Africa and were brought to the US through the “traffic in human flesh.” Particularly after the Haitian revolution, slaves gathered in Congo Square on the edge of the French Quarter in New Orleans to dance the bamboula.

84
Wilhelm Bölsche, “Der Termitenstaat. Schilderung eines geheimnisvollen Volkes (1931),” 52, cited in Johach, “Termitewerden,” 31.

85
Bölsche, “Der Termitenstaat,” 34.

86
Karl Escherich, inaugural speech at Ludwig Maximilian University in Munich on November 25, 1933.

87
Jean L. Sutherland, “Protozoa from Australian Termites,” *Quarterly Journal of Microscopical Science*, no. 2 (1933), 145–73, 76.

88
Donna J. Haraway, “Otherworldly Conversations; Terran Topics; Local Terms,” *Science as Culture* 3, no. 1 (1992), 94.

89
Myra Hird, *Sex, Gender and Science* (Palgrave Macmillan, 2004), 68.

90
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