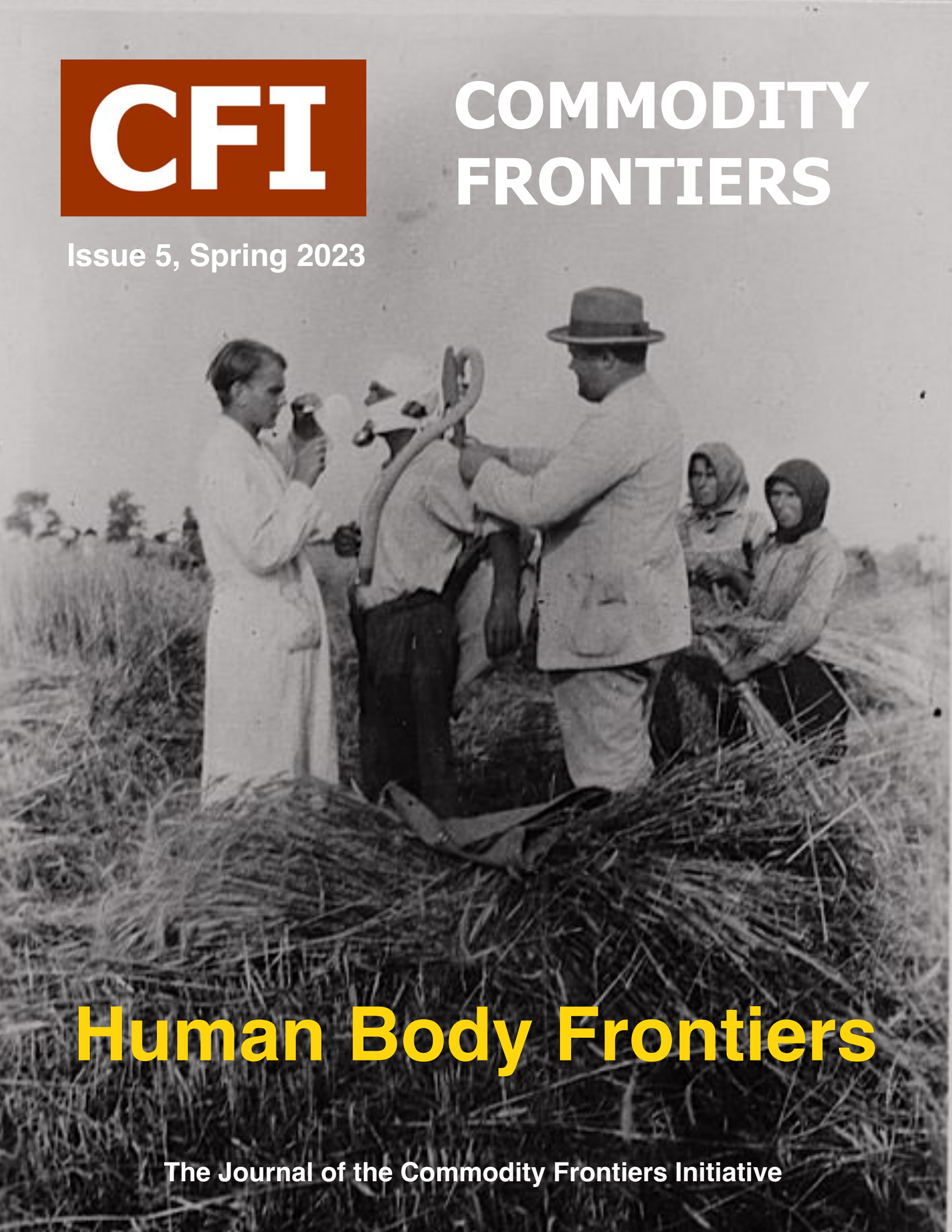
CFI

COMMODITY FRONTIERS

Issue 5, Spring 2023



Human Body Frontiers

The Journal of the Commodity Frontiers Initiative

Commodity Frontiers Editorial Board

Table of Contents

All articles are posted online at the Brown University Digital Repository, and at our website, commodityfrontiers.com.

Commodity Frontiers

Capitalism, Contestation, and the Transformation of the Global Countryside

The Journal of the Commodity Frontiers Initiative

Image: Llamas grazing behind the old signboard of the "Cuprita" copper mine, Bolivia. Hanne Cottyn, 2018.

Mission Statement

Commodity Frontiers is the Journal of the Commodity Frontiers Initiative (CFI). Edited by a group of scholars and researchers from various disciplines and organizations in the CFI Network, the Journal explores the history and present of capitalism, contestation, and ecological transformation in the global countryside. The point of departure is the commodity frontier concept, which describes sites and processes of the incorporation of "resources" into the expanding capitalist world economy; resources like land, raw materials, knowledge, and labor. In the past 600 years, commodity frontier expansion has been characterized by ecological and distributional conflicts; the displacement and dispossession of Indigenous peoples and other groups; racialization and othering across colonial, settler colonial, and postcolonial geographies; and the production of class, gender, race, and other inequalities.

Each themed issue of *Commodity Frontiers* includes articles about theorizing, studying, and teaching with commodity frontiers. The Journal features reflections and reviews on the uneven and often violent dynamics of capitalist expansion, social change, and ecological transformation on global as well as local scales, in the past and at the present. Contributors include historians, social scientists, (political) ecologists, artists, and activists who work on global commodity production and circulation, rural societies, labor history, the history of capitalism, colonial histories, social metabolism, and conflicts and counternarratives in the countryside. *Commodity Frontiers* endeavors to carry out one of the central goals of the CFI: to provide long historical perspectives on problems that are often assumed to be modern, and to link historical and contemporary research to critically recast our thinking about sustainability, resilience, and crisis.

Commodity Frontiers is a biannual open-access publication housed in the Brown Digital Repository and distributed through email subscriptions.

Objectives
Commodity Frontiers aims to provide accessible content from multiple perspectives on the past, present, and future of commodity frontier expansion and dynamics. We feature research and educational activities undertaken by academics, artists, activists, and other civil society actors. By inviting short contributions from our multidisciplinary and multi-sectoral networks, and distributing the open-access Journal through our website and the Open Journal System, we aim to reach a broader audience than typical academic publishing allows. We strive for "real-time" reports and reflections on contemporary issues, and contributions that link past and present.

Editorial Process
The articles in *Commodity Frontiers* are not double-blind peer reviewed. Rather, Section Editors purposely invite contributions related to the theme of each issue from experts in respective fields. All articles are reviewed by Section Editors and at least one Editor-in-Chief.

Contributions
Articles that appear in *Commodity Frontiers* are invited contributions. We do not accept uninvited manuscripts. If you would like to contribute to *Commodity Frontiers* or the CFI, please email Mindi Schneider (mindi_schneider@brown.edu).

Acknowledgments: Mindi Schneider does the design and production work for *Commodity Frontiers*. Special thanks to Marjolijn Dijkman for our logo and cover design, and for invaluable design advice. Thanks to Andrew Creamer for managing the journal in the Brown Digital Repository. Thanks to Jeanne Loewenstein for design support. Thanks to all of the contributors to this issue for sharing their work and insights.

Cover image: Physiological experiments with agricultural workers conducted by Géza Farkas near Budapest, 1929. Courtesy of Harvard Medical Library collection, Francis Gano Benedict Papers, Center for the History of Medicine in the Francis A. Countway Library, Harvard University.

Editorial Introduction

Commodity Frontiers 5, Spring 2023

Human Body Frontiers

Mindi Schneider

My back hurts.

When I was 19, spinal fusion surgery effectively turned my lower back into an immobile, very stubborn rock. So, every day, for the past few decades, my back hurts. And every day, for the past few decades, I sit in front of this computer, reading, typing, mousing, and trying to ignore that obnoxious little rock as he screams—pleads, really—for me to get out of this chair, right now, please, I can't go on like this, MOVE IT, LADY!!!

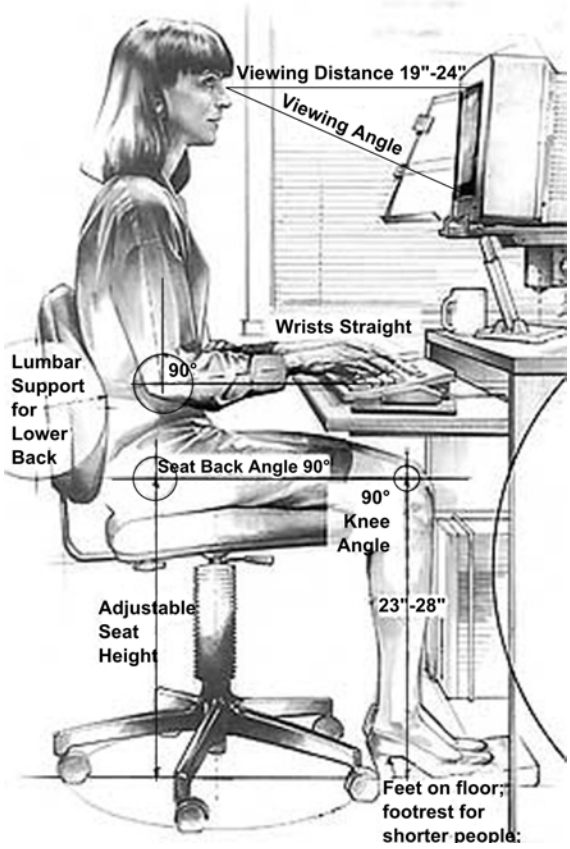
I have a sneaking suspicion that my body doesn't like to work.

Maybe you can relate, with or without the spinal surgery bit. Scholarship, after all, requires spending years sitting at desks and screens after spending months hunched over in archives or riding bumpy buses through fieldwork. For many of us, it involves weeks of feeling anxious about ever-expanding to-do lists, upcoming and passed deadlines, looming grant proposals, that weird thing you said to a colleague last year, or the fact that you've only written one crappy paragraph after typing for 3 hours.

Working can really hurt.

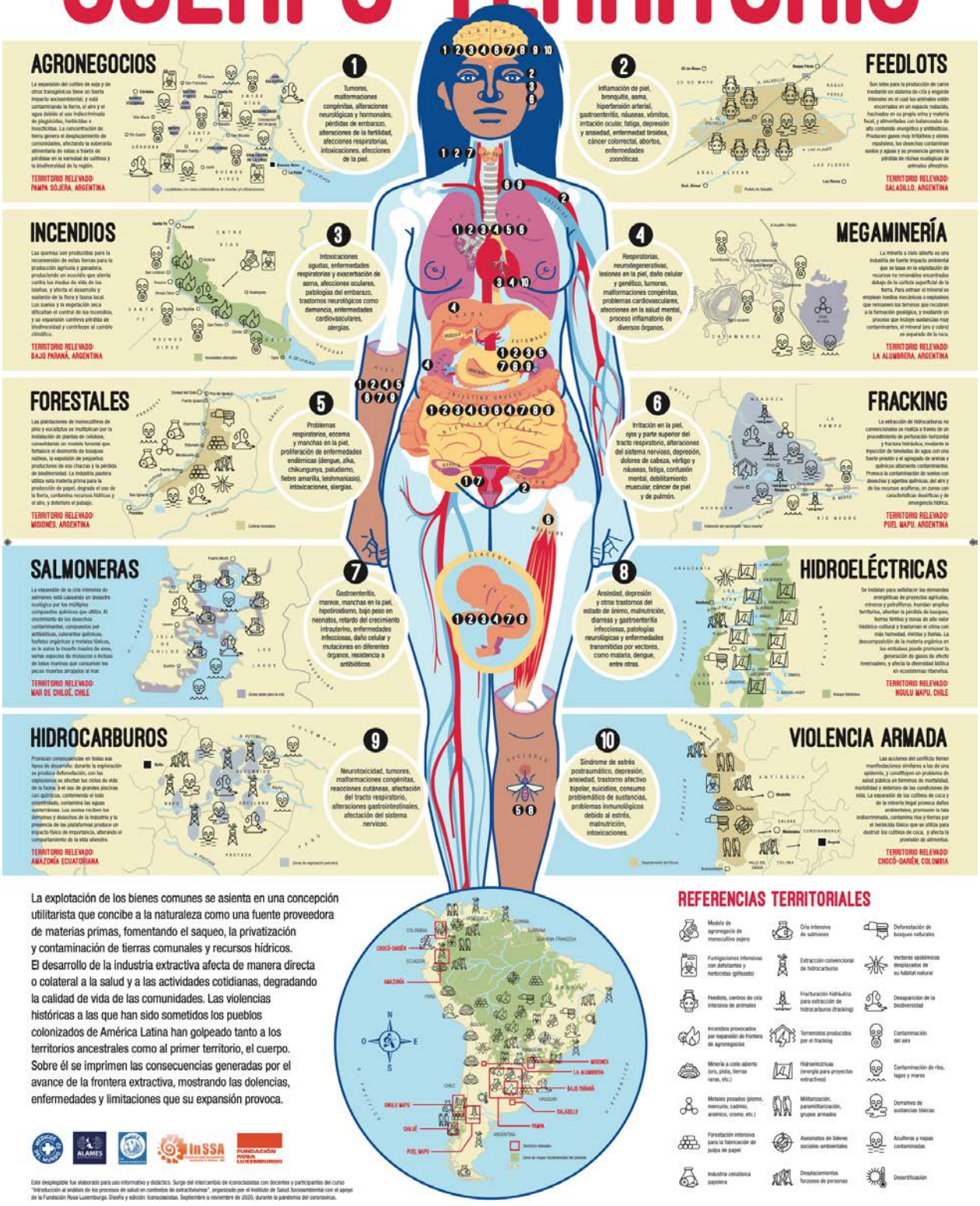
And this is privileged work. For those of us with the luxury of being able-bodied and spending a good deal of our lives working on ideas while perched at desks, we tend to excel at engaging our favorite cranial organ, often to the detriment of other parts of our bodies. Our backs hurt, our shoulders ache, our necks are cricked, our digestion might be off…but boy, oh boy, did we just pen another brilliant peer review for _____ (insert for-profit publisher name here)!

[Stretch break.]



10 PROBLEMÁTICAS SOCIOAMBIENTALES EN LA ARGENTINA Y SUDAMÉRICA, Y SUS GRAVES CONSECUENCIAS EN LA SALUD

CUERPO-TERRITORIO



Este desplegable fue elaborado para uso informativo y didáctico. Surge del intercambio de iconoclasistas con docentes y participantes del curso "Introducción al análisis de los procesos de salud en contextos de extractivismos", organizado por el Instituto de Salud Socioambiental con el apoyo de la Fundación Rosa Luxemburgo. Diseño y edición: Iconoclasistas. Septiembre a noviembre de 2020, durante la pandemia del coronavirus.

This issue of *Commodity Frontiers* is about our collective backs and what human bodies can tell us about commodity frontiers. It's about the regimented bodies that sustain capitalism, and the (same) unruly bodies that challenge its smooth development. The issue is about labor, sex, blood, reproduction, racialization, decarceration, community, metabolism, and memory. It's about what bodies do, how they are unevenly incorporated into capitalist economies, and how they resist or contest incorporation.

We start from a simple premise: disciplined human bodies sustain capitalism.

They do so through labor and social reproduction, in vastly uneven ways, across intersectional social categories, histories, and geographies. As sites and processes of the incorporation (and creation) of "resources" into the expanding capitalist world economy, commodity frontiers are also sites and processes of incorporating human bodies. Today and in the past, the extraction, production, and circulation of goods and services require human bodies that work, think, and remember.

But human bodies do much more, and they need much more. Bodies require rest. They need care. And throughout the day—every day—they have to metabolize the foods, experiences, and feelings that are "input" to them. Human bodies continually act, react, process, and change. Each body is unique from the beginning, and in the course of life, they all grow, morph, age, slow down, become ill, become injured, regenerate. Bodies, in short, are unruly biological (and emotional) systems.

So what, really, can human bodies tell us about commodity frontiers?

The image on the preceding page provides one powerful link and example. Titled, "Body-Territory: 10 Socio-Environmental Problems in Argentina and South America and Their Serious Consequences on Health," the image is from the Institute for Socio-Ecological Health in Rosario, Argentina. Jonas Adriaensens of Ghent University shared the image with *Commodity Frontiers*. He describes it as follows:

> The idea of body as a territory has been heavily studied in political sciences, sociology, and cultural studies, with authors like Foucault and Agamben developing notions like biopolitics to detail how power operates on bodies in society, and Haraway conceiving of the body as a contested territory. In this image, developed by the Institute for Socio-Ecological Health in Rosario, Argentina, a connection is made between human health and extractivist activities.
>
> The central point here is that extractivist activities in South America manifest themselves not only in destroyed ecosystems and landscapes, but also on the human bodies of those living close to them. The body becomes itself an extracted territory and extractivism is employed to the detriment of human health. Health thus becomes inseparably connected to its political, socio-economic, and ecological context and we do not speak of body and territory, but of body-territory (or *cuerpo-territorio* in Spanish).

Cuerpo-territorio situates human bodies in dialectic relation with non-human environments and socio-political-economic forces. Viewed through a commodity frontiers lens, we can say that the human body is 1) an inseparable aspect of frontier expansion, especially as abstracted labor, 2) itself a site of incorporation, and 3) a site of contestation, both individually and collectively (and consciously and unconsciously), refusing seamless incorporation.

Articles in this issue take up these three points and the relations between them. The first two articles situate human bodies as labor. Speaking directly to capitalist transformations of the global countryside, Juri Auderset's piece orients laboring bodies in the rural sphere. He looks at how scientific management and work rationalization in the 19th and 20th centuries operated to incorporate agricultural labor into expanding frontiers. The image on the cover of

this issue comes from Auderset's piece. It depicts experiments conducted on agricultural workers in 1929 Budapest with the goal of determining how much labor could be extracted in the shortest humanly possible timeframe.

Eglė Česnulytė's article introduces the feminist lens that orients much work on human bodies as units of analysis in general, and on the laboring body in particular. Her piece argues that sex work is social reproductive work, showing the importance of this form of (female) labor to the creation and maintenance of (male) labor forces in Kenya. While sex work is largely unrecognized, undervalued, and understudied, it is an important site that both enables and contests capitalist patriarchy: while women are enrolled in its expansion, they can also independently accumulate capital to ideally reinvest in themselves and their families.

Sigrid Vertommen's contribution continues with questions of gendered bodies and capitalism. Rather than centering labor, she offers a decolonial materialist feminist perspective on frontiers that centers "the flesh" as extracted, mined, and commercialized *territory*. Looking at the Republic of Georgia as a surrogacy hub at Israel's "fertility frontier," she theorizes the incorporation of *laboring* bodies and relationships at the crossroads of biocapitalism and setters colonialism.

Fany Lobos Castro's view of bodies existing in "living hybrid" with territory and water shares much with (Marxist) feminist perspectives. But Lobos Castro's approach builds directly on ancestral wisdom and lived experience. An activist-scholar based in the rural territories of Maule Sur, Chile, Lobos Castro discussed her views on bodies and commodity frontiers with *CF* editor, Katie Sandwell. To resist commodification of any one of the three elements in the "living hybrid" triad, she describes (and urges the value of) collaborative ways of living that refuse atomization. Necessities of community, women, and collective care are strong in her piece.

Decarceration activist, Marlon Peterson, shares a similar focus on resistance in and through community. In his conversation with *CF* editor, Stha Yeni, Peterson discusses his work as a writer, criminal system legal expert, public speaker, and mentor in communities on the prison pipeline in the United States. A formerly incarcerated person himself, he practices abolition through introspection and personal interrogation, as well as through community learning and engagement, and solidarity with international movements. Yeni and Peterson's article not only offers deep insights into abolition and decarceration; it is also a master class for practicing humility in fieldwork that students of ethnography should read and heed.

Starting with Ulbe Bosma's piece, the final three articles switch gears to look at human bodies—and parts of them—as themselves, commodity frontiers. From his new book, *The World of Sugar: How the Sweet Stuff Transformed Our Politics, Health, and Environment over 2,000 Years* (2023, Harvard), Bosma argues that through sugar, capital has hijacked human metabolism, reconstituting it as a frontier for accumulation. We see how sugar "cravings" are historically constructed to the point that they seem "natural" and inevitable. Meanwhile, sugar-related public health crises reflect the (individual and collective) body's rejection of sucrose colonization.

While radicalization and the dramatically uneven ways that racialized bodies are seen, valued, and treated in capitalist-colonial-patriarchal systems figure in other articles in this issue, Veronica Gomez-Temesio's piece takes it on more directly. Based on fieldwork in the Wonkifong Ebola quarantine unit in Guinea in 2015, Gomez-Temesio illuminates the exploitation of Black bodies as "guinea pigs" and sources of value for Western/Northern medical research industries. Her articles follows the commodification of blood samples taken from people in Guinea in the wake of the 2013 Ebola epidemic, and the subsequent harm and manipulation that blood donors have endured.

Finally, the conversation between neuroscientist, André Fenton and *CF* editor, Maarten Vanden Eynde, considers memory as a possibly emerging frontier. Their discussion ranges from what, actually, memory is and

where it resides, to if and how AI (artificial intelligence) can duplicate it. Fenton helps us see bodies (and memory) as dynamic systems, full of complex and only partially understood relationships, comprised of individual and impermanent pieces that constitute networked and enduring wholes. To this reader, the parallels between what neuroscientists study inside of our skin, and what historians and social scientists study outside of it are exciting. The conversation also offers some clues for how we might connect these inner and outer realms.

On a final note, this issue of *Commodity Frontiers* is dedicated to the indomitable Tina Turner (November 26, 1939 – May 24, 2023). She left her earthy body just as the Issue was going to press. May her fierce, soulful, redemptive, embodied life be an inspiration to us all.

[Don't forget to stretch.]

Mindi Schneider is a Lecturer at Brown University in IBES, the Institute at Brown for Environment and Society. She is Senior Editor of *Commodity Frontiers*.

Correspondence:
Mindi Schneider, mindi_schneider@brown.edu.

Cite this article:
Schneider, M. (2023). "Human Body Frontiers: Editorial Introduction" *Commodity Frontiers* 5: i-v. doi: 10.26300/n87z-c298.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.

Consigning the "Human Motor" to the History of Agricultural Work: Reflections on the Fractured Trajectory of Scientific Management and the Rationalization of Labor

Juri Auderset

Keywords: agriculture, history of work, scientific management, industrialization, capitalism, history of the body

Abstract: Scientific management and work rationalization are usually associated with the rise of industrial capitalism and factory labor. This narrow perspective, however, obscures the rural and agricultural spaces in which practices of labor management and work rationalization were important throughout the 19th and 20th centuries. Following up on Caitlin Rosenthal's book *Accounting for Slavery*, this essay explores how our view of the history of work under the conditions of industrial capitalism changes if we account for the multiple and fractured lineages that connected visions of rationalized work on plantations, factory floors, and family farms. This approach not only renders visible the ecological and metabolic complexity of agricultural work, but it also provokes new questions on how agricultural labor was incorporated into the expanding frontiers of modern capitalism and how the transformative forces of industrialization changed the perception of work in modernity.

When one thinks of scientific management, the rationalization of work, and the training of the working body for most efficient performance, the modern factory usually comes first and foremost to mind. The industrial shop floor is an iconic place of labor in the age of "high modernity" (Herbert, 2007), a key component in what Anson Rabinbach calls the "social imaginary of productivism" (Rabinbach, 2018: vii). It appears in our imagination as a space governed by a high degree of division of labor, in which the manufacturing process is reduced to simple mechanical movements of synchronized bodies, driven by the linear and tireless rhythm of the steam engine and later the assembly line (Freeman, 2018).

In "Modern Times," as Charlie Chaplin's classical movie suggests, the living human body with its metabolic cycles and its proneness to fatigue becomes the sole grain of sand in an otherwise well-lubricated mechanical manufacturing process. Yet, as much as factory work is associated with alienation and degradation, it is also acclaimed as a site of yet unknown efficiency and productivity of work. Whatever the ambivalent and conflicting normative judgments may be, in their very contrariness they share, somehow paradoxically, a common pattern of interpretation: Modern work, it seems, can only be industrial work.

Max Weber noted this cognitive association as early as 1893:

> Nowadays, when the "workers' question" is discussed in the press or elsewhere, it is self-evident – and this is a peculiar phenomenon – that the crowds of workers in the large cities and industrial centers are regularly thought of. Smoking chimneys, enormous drive belts and the wheezing of steam engines, cellar and attic apartments in the back houses of the big cities and the liquor bars on their street corners form the background. […] This is the air of life in which the "workers' question" involuntarily

> dwells in the imagination of those who speak, write, and read (Weber, 1993: 123, translated by JA).

For workers who were not to be found in the big cities and industrial towns, whose "background" was not necessarily chimneys, driving belts, and steam engines, but farmhouses, stables, livestock, agricultural machinery, arable land, planted fields, and meadows – for these workers, and that's Weber's punch line, there is hardly any place in this imagined world of "modern" work.

This "peculiar phenomenon," that alleges labor conflicts and efforts to increase the productivity of work by changing bodily techniques could only be found in the sphere of industrial manufacturing and hardly in the sphere of agricultural work, not only determines collective imaginations in industrial or, as some might be a bit hasty to think, post-industrial societies. This particular industrial bias also deposited itself in historiography with some displacing weight.

The history of work in the 19th and 20th centuries has long been written predominantly as a history of industrial wage labor; for a long time, historiography showed little sensitivity or interest in the transformation of agricultural work under the conditions of industrial capitalism, nor, for that matter, in subsistence and domestic work or in unpaid care work. To be sure, there have always been voices calling for adequate consideration of the history of agricultural work. The American historian T.H. Breen, for example, demanded in the early 1980s that "historians must bring the same kinds of qualitative and temporal distinctions to agricultural work as they reflexively bring to industrial labor" (Breen, 1980: 248). It cannot be said that many historians have heeded this call.

In recent years, however, there has been some movement in the history of labor to recognize agricultural work as an essential part of the modern world, and therefore a subject of historical research that merits our scrutiny. For those who are not persuaded to think of agricultural work as simply a relic of bygone times that somehow strangely survived under the conditions of modern industrial capitalism, this movement has been welcome. It is worthwhile to remember Raymond Williams' cautionary words regarding the familiar tendency to associate agricultural work with "tradition" and the "past" and to misrepresent it as "archaic" and "primitive:"

> There's been an extraordinary acquiescence and drift towards the sort of brisk progressivism that talks of rationalizing archaic production when as a matter of fact there is nothing archaic about it (Williams, 2015: 314).

Ignoring insights such as Williams' would reinforce the stereotypical view of allegedly conservative farmers tangled up in a web of tradition and reluctance to progress and would tend to perpetuate the relative indifference of historians to the challenges, problems, and changes of rural society in the age of industrial capitalism.

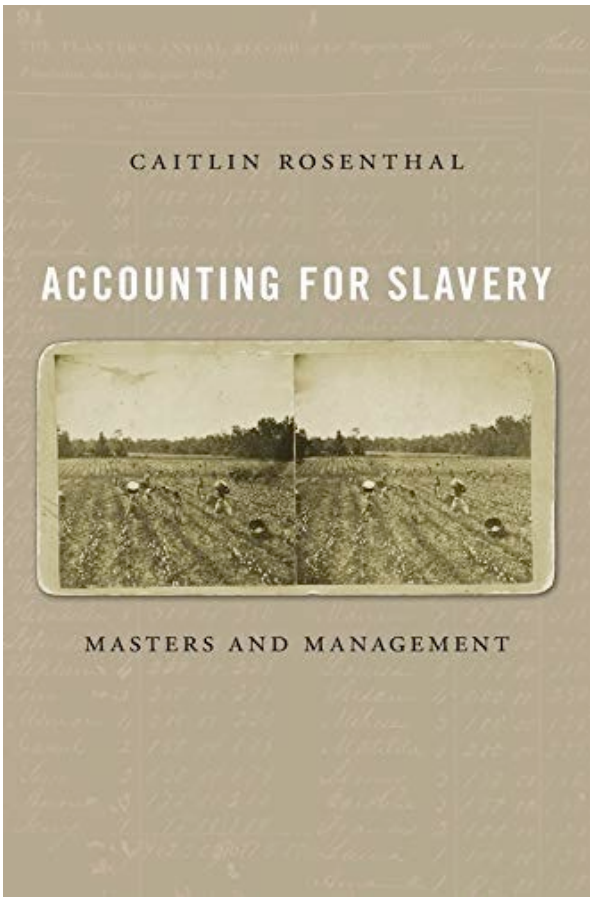
The "new history of capitalism," as well as global labor history, have recently brought an important counterweight to such tendencies in historical writing and have contributed to the "rediscovery" of the countryside and agricultural production as inherent components of modern commodity frontiers. As Sven Beckert argues,

> Any understanding of capitalism needs to take into account the transformation of the global countryside, historically the most important source of labor, raw materials, and markets – and, at times, of capital. (Beckert, 2016: 242).

Indeed, that is a crucial observation, yet the countryside was not only a "source of labor," but a very heterogeneous, diverse, and sometimes enigmatic world of agricultural working practices and human bodies interacting in myriad and contingent ways and in complex ecological environments and webs of social relations with the earth, plants, and animals (Vanhaute, 2021: 3–5).

Bringing this complexity of agricultural work more into focus may also go along with important shifts in the way we look at the history of scientific management, work rationalization, and the history of bodies at work. Caitlin Rosenthal recently provided a particularly stimulating example of this historiographical current in her book *Accounting for Slavery*. While management practices of exact and systematic supervision of labor as well as the establishment of a regime of strict labor discipline are usually associated with the rise of scientific management and Taylorism towards the end of the 19th century, Rosenthal draws such practices back to the plantation economies in the British Caribbean and the US South in the late 18th and 19th centuries.

In contrast to other historical interpretations of the relationship between slavery and capitalism that stress the economic backwardness of what contemporaries called euphemistically the "peculiar institution," Rosenthal argues that the plantation economy and slave labor were by no means incompatible with capitalism. In



accordance with recent research on the interplay between slavery, the emergence of modern capitalism, and industrialization (Beckert/Rockman, 2016), Rosenthal emphasizes the entrepreneurial view of planters who turned the working bodies of enslaved human beings into quantified, abstract, and commodified "hands," a view that was quite in tune with the market logics of capitalism.

Southern planters in fact developed sophisticated "paper technologies" of pre-printed account books that allowed them to monitor prices and weights of picked cotton and to measure the exchange and market value of the human beings they included as their property. Moreover, these paper technologies also provided a means to document the labor of the enslaved and to introduce rating systems for categorizing their brutally exploited labor force along different classes of work performance. Thus, Rosenthal paints a picture of plantation economies as modern business enterprises longing for control over their labor force, being obsessed with performance and work productivity, and foreshadowing later forms of labor management in industrial plants.

The aim of extracting the maximum labor force out of the worker's body, as well as the supervisory observation and re-arrangement of bodily motions at work, might have been crucial features of Taylorism and other labor management practices arising with the industrial rationalization movement in the late 19th and early 20th centuries. Yet, slaveholders had already experimented with comparable techniques, collecting data on labor productivity, observing the plantation as an integrated system of connected laboring processes, and conducting experiments akin to what Taylor and Gilbreth later propagated as time and motion studies. "In exceptional cases," Rosenthal writes, "the level of observation planters applied to their slaves [sic] approached the time and motion studies of scientific management." (Rosenthal, 2018: 117)

To be sure, the stopwatch as an instrument to increase labor output is something quite different from the threat or the bodily experience of physical violence. On the

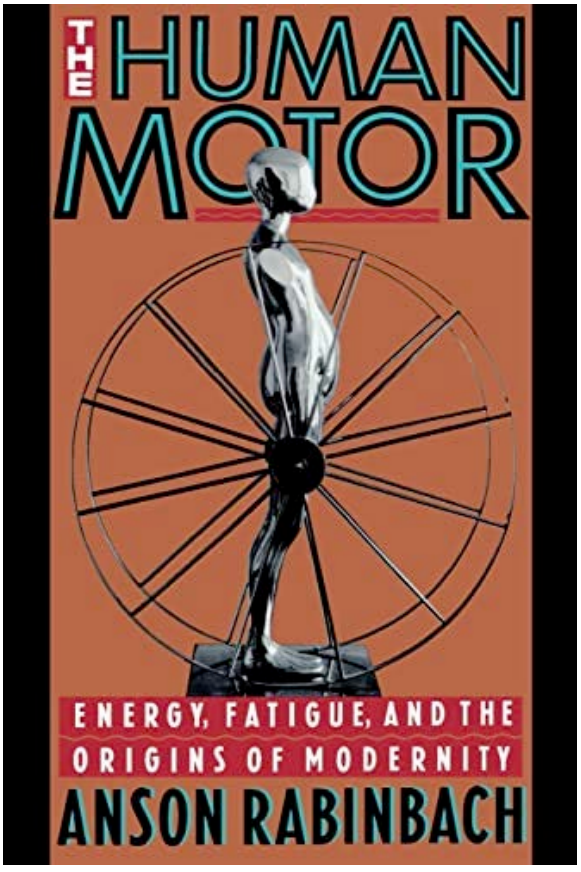
plantations in the American South, it was the slave driver's lash that audibly drove and disciplined the enslaved to increase the productivity of their bodies, rather than the ticking of the clock or the stern gaze of the foreman (Baptist, 2014).

Nevertheless, Rosenthal's detailed reconstruction of resemblances between planters' unfree labor management techniques and scientific management's disciplinary regimes for "free" labor is revealing, even if historians had begun pointing towards such lineages earlier. Marcel van der Linden, for instance, in a thought-provoking essay on the origins of modern labor management, argued that it seemed "obvious that slave [sic] plantations and other institutions based on coercion have been important sources for modern labor management" (van der Linden, 2010: 516).

Apart from these similarities and connections in labor management, Rosenthal offers another path to rethink the links between plantation economies, industrial capitalism, and the history of work in the modern age. This path derives from the imaginary of the working body. As Rosenthal shows, the cotton planters in the American South increasingly conceived of their plantations as "machines," and the enslaved laborers in their property as cogs in the machine of the plantation economy. Their almost unlimited power over enslaved bodies allowed planters to imagine the "plantation itself as a great machine," and the unfree laborers as interchangeable means of production. Even if the enslaved developed their own strategies of resistance and had their repertoire of "weapons of the weak" (Scott, 1985), they could only partially escape, subvert, and constrain their master's controlling and violent power.

The merging of accounting, discipline, and cruel physical violence thus led the planters, as Rosenthal puts it, to think of their plantations "as if a machine of many parts – a continuous-process assembly line on a grand scale" (Rosenthal, 2018: 69 and 112). The fact that planters increasingly thought of their mode of production as an activity that resembled the mechanized functioning of industrial manufacturing is as unsettling as it is revealing, given the fact that enslaved labor was first and foremost directed to the soil, to plants, and to animals. In other words, it was an agricultural activity that became to be regarded *as if* it were like an industrial machine process.

Crucial for establishing such conceptual bridges between agricultural and industrial labor, as well as between the plantation and the factory, was a view of the human body that was itself deeply rooted in 19th century physics, thermodynamics, and mechanical arts: the idea of the human body as a machine for converting chemical into kinetic energy. As Anson Rabinbach has brilliantly shown in his study of the metaphor of the "Human Motor," generations of physiologists, work scientists, and social reformers drew on this powerful epistemic metaphor to explore the possibilities and the limits of incorporating, conserving, transforming, and deploying energy into labor force. In fact, this reductionist mechanical and



industrial image of the body as a thermodynamic motor and energy converter became an obsession in the discourses surrounding the scientific study of work from the mid-19th to the mid-20th century and it altered the perception of work in fundamental ways.
"The metaphor of the human motor," Rabinbach writes, "translated revolutionary scientific discoveries about physical nature into a new vision of social modernity" (Rabinbach, 1992, 1). Reading Rosenthal's account of the planters' perspective on the bodies of the enslaved alongside Rabinbach's intellectual history of the European science of work, the assumption arises that the metaphor of the human body as a motor provided something like a "theoretical metonymy" (Shapin, 2004: 4) that linked the enslaved labor on plantation economies to Taylor's scientific management and European discourses on the scientific study of work.

There are not only paths leading from the plantation economy and enslaved labor to the industrial shop floor and the laboratories of work scientists, but also from there back into the countryside to the stables and fields of farming communities. This side of the story, however, remains in large parts to be written. The following represents an initial effort to unearth the potential of such a historical exploration (Auderset, 2021; Auderset, 2023). First, it is important to emphasize that the languages of Taylorism and work science, as well as the obsessive search for the most efficient and productive solutions to the problems of modern industrial labor, not only zigzagged across the Atlantic Ocean and triggered attempts to rationalize factory work (Nolan, 1994), but soon captured the imagination of agricultural economists, engineers, and social reformers who tried to apply this knowledge to farm work.

Especially in Europe during the interwar years, Taylorism and work rationalization became a crucial leitmotif in agricultural discourses. Nothing less than a "taylorization of agriculture" and a "taylorist reform of the working processes of men, animals, and machines" was on the mind of the German Gustav Winter in 1920, for instance. Other agronomists and agricultural economists reflected in similar, albeit sometimes more cautious ways, on the possibilities and limits of applying Taylorist principles and the findings of the science of work to agriculture.
The 1920s also witnessed several successful attempts at institutionalizing the science of agricultural work as a subdiscipline of the agricultural sciences. In Pommritz, Saxony, for example, an Experimental Station for the Study of Agricultural Work was established in 1919 and by the late 1920s a European-wide web of scientific institutions and initiatives dedicated to the study of agricultural work was firmly in place. These networks linked scholars across national boundaries and released an extensive stream of studies on the physiology, psychology, and practical aspects of agricultural work and its "rationalization," as well as on the treatment, education, and feeding of working animals and the prospects of replacing the workforce of humans and animals with motorized technology. The circulation of scientific knowledge on agricultural work was also proliferated by forums for transnational exchanges like the International Management Congresses or the International Agriculture Congresses which often acted, in the words of Kiran Klaus Patel, as "clearinghouses of global expertise" (Patel, 2016: 39).

At the same time, however, this circulation of knowledge on agricultural work flowed both as streams swollen to remarkable intensities and as dried and thin trickles. Interestingly, for instance, work rationalization and scientific management in farming hardly played a role in the heartland of Taylorism. Observers from the United States reacted with astonishment when they registered the flowering of the science of agricultural work in the knowledge networks of European agronomists and the intense rationalizing fervor that accompanied it in the 1920s. As Asher Hobson, the American delegate at the International Institute of Agriculture in Rome, observed in 1927: "In America the Taylor System is accorded little importance in its application to agriculture. It is exclusively of interest to industry." But among European agronomists and agricultural

Physiological experiments with agricultural workers conducted by Géza Farkas near Budapest, 1929. Courtesy of Harvard Medical Library collection, Francis Gano Benedict Papers, Center for the History of Medicine in the Francis A. Countway Library, Harvard University.

economists, Hobson noted with some wonderment, there were "enthusiastic followers of Taylor" (Hobson, 1927: 423).

While US farming in the interwar years certainly provided examples of motorized agriculture, large-scale commodity production and monocultures, rationalization, and standardization and in general strove to accomplish the "industrial ideal" (Fitzgerald, 2003), one of the most prominent features of American industrialization – the emergence and application of scientific management – seemed strikingly absent from the agricultural sphere. It was only in the early 1940s, in the context of the Emergency Farm Labor Program during World War II that American agricultural economists at the United States Department of Agriculture (USDA) re-discovered the scientific work that their European counterparts had launched in the 1920s. Together with Lilian Moller Gilbreth, the wife of Frank Gilbreth, a pioneering scholar in time and motion studies and the doyenne of industrial management techniques in America, they developed the Farm Work Simplification Program and aspired to apply Taylor's and Gilbreth's ideas to agriculture, even though some of the scholars involved admitted that scientific management did not find in agriculture "a very good medium in which to develop" (Black, 1947: 550).

Apart from this remarkable transatlantic trajectory of scientific management in agriculture in the first half of the 20th century, the skepticism gleaming through this quotation points to another puzzling issue that accompanied the discourses on agricultural work and that fueled the debate in how far farm work should be modeled along factory labor. The rise of a science of agricultural work also created a field of contestation between different conceptual approaches to perceiving, analyzing, and transforming agricultural work under the conditions of 20th century industrial capitalism.

As European scholars and scientists began to investigate the complex ecological conditions of agricultural work in the 1920s and as they became aware of the multiple cultural meanings and social values that farming communities attached to their labor beyond the aim of making it more profitable and productive and less physically demanding, the early enthusiasm for Taylorism soon began to crumble.

In contrast to the earlier heralds of a "taylorization of agriculture," some protagonists of the newly proclaimed science of agricultural work now called for a more thoroughgoing consideration of the variable and dynamic conditions of agricultural work. They aimed at the physiological and psychological rationalization of the laboring bodies of the farm population at large, targeting the elimination of fatigue, overwork, physical deformation, and wasteful movements in agricultural work, while at the same time enhancing the "efficiency of the human motor," as the German agricultural scientist and Director of the Experimental Station for the Study of Agricultural Work in Pommritz Georg Derlitzki, put it (Derlitzki, 1927: 135).

Revealingly, the metaphor of the "human motor" continued to shape the scientific imaginary of the working body in agriculture, but at the same time, work scientists like Derlitzki now called for a more systematic consideration of the specific working conditions in agriculture under which the human motor deployed its labor force. And this shift from the working body itself to the interactions between the body and the specific circumstances of work made clear that the rationalization schemes borrowed from the industrial shop floor and from the classic writings of scientific management seemed in many ways at odds with the delicate nature of farm work.

Indeed, work scientists dealing with the idiosyncrasies of agricultural work became increasingly aware of the variable, dynamic and often uncontrollable ecological and metabolic interdependencies that left their marks on the world of farm labor and that often informed the perceptions, the knowledge, and the interpretations of those who toiled on the fields and in the farm households. When it came to working the land, caring for animals, and growing plants, the industrially inspired

ideas of scientific management and the rationalization of work frequently ran up against the complex "taskscapes" of agriculture that were shaped predominantly, as Tim Ingold argues, by a "process of growing, not making" (Ingold, 2000: 81).

Following the traces of labor management and work rationalization beyond the walls of the factories thus renders visible some of the too-long dismissed rural spaces where working bodies and their movements were monitored, observed, trained, disciplined, and formed with the aim of increasing work productivity. Agriculture was by no means an island in the sea of 19th and 20th centuries obsessions with energy, fatigue, and efficient work, yet it did have its idiosyncrasies that rendered it different from industrial labor. These differences, however, are hardly captured by inscribing them in the familiar conceptual dichotomies of "tradition" and "modernity." It was rather the interaction with complex ecological environments, the incertitudes of working with and on biotic resources and organic matter, the constraints of the climate and weather on crop choices and production systems, the seasonal and cyclical temporalities of plants and animals prone to pests and diseases, and the often intangible or ignored effects of certain agricultural practices on soil fertility that shaped agricultural working practices and their changes in time and space.

Unshackling the history of scientific management and the rationalization of working bodies from the narrow industrial enterprise framework into which it has long been pressed, renders this complexity visible. It allows us to ask new questions about how agricultural labor was incorporated into the expanding frontiers of modern capitalism and how the transformative forces of industrialization changed the perception of work and altered the ties that were forged between humans and the earth by working the land. This perspective does not only account for the multiple lineages that linked plantations, factory floors, and family farms, it also helps to bring agricultural work and its ecological entanglements back onto the canvas of a global history of capitalism and labor. As Richard White reminds us: "labor rather than 'conquering' nature involves human beings with the world so thoroughly that they can never be disentangled" (White, 1996: 7).

References

Auderset, J. (2021). 'Manufacturing Agricultural Working Knowledge: The Scientific Study of Agricultural Work in Industrial Europe, 1920–60s.' *Rural History* 32(2), 233–248.

Auderset, J. (2023). 'Missed Encounters and Unexpected Connections: Transatlantic Crossings in the Study of Agricultural Work, 1920–1960.' In H. Hartmann and J. Tischler (Eds.), *Planting Seeds of Knowledge: Agriculture and Education in Rural Societies in the Twentieth Century*. New York/Oxford: Berghahn, 168–193.

Baptist, E. E. (2014). *The Half Has Never Been Told: Slavery and the Making of American Capitalism*. New York: Basic Books.

Beckert, S. (2016). 'The New History of Capitalism.' In J. Kocka and M. van der Linden (Eds.), *Capitalism: The Reemergence of a Historical Concept*. London etc.: Bloomsbury, 235–250.

Beckert, S./Rockman, S. (Eds.) (2016). *Slavery's Capitalism: A New History of American Economic Development*. Philadelphia: University of Pennsylvania Press.

Black, J. D. et al. (1947). *Farm Management*, New York: Macmillan.

Breen, T.H. (1982). 'Back to Sweat and Toil: Suggestions for the Study of Agricultural Work in Early America.' *Pennsylvania History: A Journal of Mid-Atlantic Studies* 49(4), 241–258.

Derlitzki, G. (1927). 'Die Bedeutung der Landarbeitsforschung in Deutschland.' In *Atti del III Congresso Internazionale di Organizzazione Scientifica del Lavoro, Parte II: Memorie*. Vol. I, Roma: L'Universale, 135–139.
Fitzgerald, D. (2003). *Every Farm a Factory: The Industrial Ideal in American Agriculture*. New Haven: Yale University Press.
Freeman, J.B. (2018). *Behemoth: A History of the Factory and the Making of the Modern World*. New York: Norton.
Hobson, A. (1927). 'Agricultural Economics in Europe.' *Journal of Farm Economics* 9(4), 421–432.
Ingold, T. (2000). *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill*, London: Routledge.
Herbert, U. (2007). 'Europe in High Modernity: Reflections on a Theory of the 20th Century.' *Journal of Modern European History* 5(1), 5–21.
Nolan, M. (1994). *Visions of Modernity: American Business and the Modernization of Germany*. New York: Oxford University Press.
Patel, K. K. (2016). *The New Deal: A Global History*. Princeton: Princeton University Press.
Rabinbach, A. (1992). *The Human Motor: Energy, Fatigue, and the Origins of Modernity*. Berkeley; Los Angeles: University of California Press.
Rabinbach, A. (2018). *The Eclipse of the Utopias of Labor*. New York: Fordham.
Scott, J. (1985). *The Weapons of the Weak: Everyday Forms of Peasant Resistance*. New Haven: Yale University Press.
Shapin, S. (2008). *A Scientific Life: A Moral History of a Late Modern Vocation*. Chicago: Chicago University Press.
van der Linden, M. (2010). 'Re-Constructing the Origins of Modern Labor Management.' *Labor History* 51(4), 509–522.
Vanhaute E. (2021). *Peasants in World History*. London: Routledge.
Weber, M. (1993). 'Die Erhebung des Vereins für Sozialpolitik über die Lage der Landarbeiter (1893).' *Max Weber Gesamtausgabe*. Vol. 4/1. Tübingen: Mohr, 120–153.
White, R. (1996). *The Organic Machine*. New York: Hill and Wang.
Williams R. (2015). *Politics and Letters: Interviews with New Left Review*. London: Verso.

Juri Auderset is lecturer for 19th and 20th Century History at the Institute of History at the University of Bern and research fellow at the Archives of Rural History in Bern. He is the co-author, together with Peter Moser, of *Die Agrarfrage in der Industriegesellschaft: Wissenskulturen, Machtverhältnisse und natürliche Ressourcen in der agrarisch-industriellen Wissensgesellschaft (1850–1950)* (2018), and currently works on a book on the history of agricultural work in late 19th and 20th century industrial capitalism.

*All photos provided by the author.

Correspondence:
Juri Auderset, juri.auderset@unibe.ch.

Cite this article:
Auderset, J. (2023). "Consigning the "Human Motor" to the History of Agricultural Work: Reflections on the Fractured Trajectory of Scientific Management and the Rationalization of Labor." *Commodity Frontiers* 5: 1-9. doi: 10.26300/0g0s-ag87.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.

Sustaining and Contesting Commodity Frontiers: Gendered Bodies and Sex Work in Kenya

Eglė Česnulytė

Keywords: sex work, body, commodity frontiers, Kenya

Abstract: This contribution considers sex work as social reproductive work in gendered capitalist structures. Exploring the role that sex workers played and continue to play in Kenya, the article argues that this commercialized social reproductive labor has historically enabled and continues enabling commodity frontier expansion and extractive processes by supporting both the workers directly engaged in extractive economies, and the vulnerable households that would struggle to survive capitalist conditions otherwise. At the same time, sex work is an extractive capitalist labor in its own right, which allows women to independently accumulate capital, and so opens the possibilities to contest some gendered notions of the local economies.

Sex work is not only work, but also social reproductive work. In a gendered capitalist system, it has a dual character. On one hand, sex work reproduces workers, enabling capitalist dynamics of exploitation, while on the other hand, it is extractive in its own right, both internalizing and contesting capitalist logics by commodifying the social reproductive function. With that said, sex worker bodies underlie and constitute commodity frontiers; they are both used to support resource extraction and incorporation into the world economy, and they contest patriarchal economic processes by creating a separate avenue of extraction for women who are marginalized. This article explores these commodity frontier dynamics by focusing on Kenyan sex workers.

When discussing capitalist development and commodity frontiers, the focus tends to remain in the economic sphere, in formal production relations and dynamics. It is a long-standing feminist critique that such a focus misses a lot of important issues and processes that make economic dynamics possible in the first place, such as social reproductive labor (Federici 2004, Fraser 2015). Assessing processes of resource incorporation into commodity regimes from the perspective of women allows us to see the ways that sexual divisions of labor and subjugation of women's reproductive labor are essential for the smooth functioning of economic relations and broader capitalist systems. Focusing on social reproductive labor as enabling capitalist dynamics also draws our attention to gendered bodies as sites of exploitation and resistance. As Sylvia Federici has argued, 'the body has been for women in capitalist society what the factory has been for male wage workers: the primary ground of their exploitation and resistance' (Federici 2004: 16).

Federici, of course, writes about European contexts. Taking her ideas more broadly, we would find that globally, laborers are exploited in a variety of contexts beyond factories, from plantations to boats to service industries. Yet despite different sites of work, the women's bodies that enable exploitation by providing social reproductive labors are a constant feature around any of these sites. Sex work is one form of reproductive labor, nearly ubiquitous, but woefully under-studied.

This contribution is based on data collected in Kenya since 2010 while working on different

projects exploring questions of sex worker agency, organization, and participation in public life (Česnulytė 2017, 2019). Collecting life stories and in-depth interviews with women selling sex on the Kenyan Coast and in Nairobi, as well as years of work with sex worker organizations in the country, allow me to demonstrate the duality of sex work in the context of global capitalism. On one hand, the article traces how commodity frontier expansion has historically relied on commercialized social reproductive labor to reproduce laborers in the country and to make up for the increasing household vulnerability to shocks in these new capitalist realities.

On the other hand, I demonstrate how female sex workers contest gendered capitalist structures by extracting in their own right and creating alternative livelihoods for women. Finally, tracing the life and work strategies of women who sell sex, this contribution shows the ways that rural and urban locations are intertwined in shaping capitalist processes in Kenya.

Enabling commodity frontiers in Kenya

Social reproductive labor provided by women selling sex was crucial for spatial commodity frontier expansion through colonial occupations and, I argue, continues to enable extractive capitalist processes today. It does so in two major ways: by responding to the social reproductive needs of workers who are directly engaged in endeavors important for capitalist extraction; and by creating an alternative route of support for households that would not be able to survive extreme exploitation otherwise.

These dynamics also demonstrate the ways in which the livelihoods of families engaged in contemporary capitalist enterprise cannot be easily classed as rural or urban and would be better understood as the ever-shifting relation between the two, just as they were from the beginning of Kenya's incorporation into global capitalist structures.

Colonial extraction and sex work

The first written mention of women selling sex in what we know today as Kenya appears in records on the Uganda railway construction of the late 19th century (White 1990). It is along this newly constructed railway line that women from local villages started selling sex to male workers (both laborers brought from India, and local men) as they moved with railway construction. Imperial projects that were to enable commodity frontier expansion into new geographical areas relied on male laborers drawn from different parts of the Empire, and rarely considered these laborers' social reproductive needs beyond food.

Men working on railway construction were considered temporary laborers, so they were separated from their families for lengthy periods of time, often accommodated in crowded and brutal conditions lacking in basic hygiene with insufficient food provisions (Ruchman 2017). In such a context, women's commercialized social reproductive labor of intimacy and care contributed to making laboring on imperial projects bearable. The colonial state occasionally recognized this role of women, at times condoning prostitution to maintain control of migrant laborers as, for example, it did in South Africa in the early 1900s (Van Onselen 2001).

Like male railway workers, men who were targeted for work in colonial Nairobi – a city founded in 1899 as a bridgehead on the Uganda Railway – were separated from their families and intended as temporary residents in the segregated city who would return 'home' to the rural areas after their work was completed. As a result of these colonial labor control measures, in 1911, Nairobi men outnumbered women six to one (Bujra 1975: 217). Male laborers employed in colonial extractive sites often lived in overcrowded conditions with little privacy for lengthy periods of time.

Women, who came to live in Nairobi on their own, commercialized social reproduction and targeted these men by providing the 'comforts of home': a clean bed, home-made meals, intimacy, and privacy (White 1990). As such,

Graffiti on Kenya Railway Museum walls, Nairobi, 2019. Photo: Eglė Česnulytė.

colonial prostitutes made otherwise brutal working and living conditions of many male workers bearable. By extension, they enabled imperial extractive projects.

Contemporary extraction and sex work

Today tourism is central to the Kenyan economy not only because it is a major source of government revenue or foreign exchange, but also because it has high multiplier effects and its growth stimulates developments in other sectors (MoT 2020). The tourism sector also accounts for over 10% of total employment opportunities in the country (KNBS 2020). The general tendency in Kenya is that the informal economy accounts for 80-90% of the economy, and the tourism sector is no exception, as most tourism jobs are informal in nature.

While the Kenyan National Bureau of Statistics does not collect gender-segregated data on employment opportunities, feminists have long pointed out that jobs in the formal economy and better-paying jobs in the informal economy tend to employ men, while women's employment opportunities tend to concentrate in lower paid, fractional and more precarious sections of the market (Kinyanjui 2014, Kabeer 2014).

The life stories of sex workers that I collected in Mombasa in 2010-11 confirm these tendencies – before turning to sex work, many women attempted to find jobs in the tourism sector. Some of them worked for periods of time as maids, waitresses, or guards in resorts around Mombasa. While such jobs are hard to get and require at least a secondary education certificate – excluding many struggling less educated women in the area – they were not well-paid and were often seasonal, so women

struggled to make a living in these conditions. Informal sector employment opportunities were also limited for women, generally in areas of social reproductive work – cleaning, serving food and drinks, cooking, petty trade, massages – and poorly paid. It is in this context of gendered economic opportunities that many decided to turn to sex work.

Sex work in this context is not only an alternative for better earnings, but also an important part of a local economy that enables global capital extraction through the tourism sector. While colonial prostitutes were targeting men drafted into colonial armies or migrant laborers in towns, today many women focus on tourists, businessmen, and men employed in the local (tourism) industries. Although they might not be providing a clean bed and tea with sugar as in the 1910s (White 1990), they are still selling social reproductive labor that these men desire. They sell romantic entertainment and the illusion of intimacy for Western tourists in their 'sunset years' (Omondi and Ryan 2020), the companionship of a 'flashy lady' for visiting businessmen, or sex and laundry services for the town's working men, who are underpaid in the tourism sector and thus cannot afford a wife (Česnulytė 2019). As such, sex work is tightly intertwined with tourism industries, serving as a partial attraction in itself, an additional entertainment, and a support for the tourism labor force.

Sex work is important for the tourism sector not only because of the sale of social reproductive labor, but also because it supports many locally-owned small businesses and makes their existence possible. From local bars, clubs, restaurants, and discotheques, where sex workers and their clients are a significant source of profits, to beauty salons and petty traders specializing in sex worker outfits, to landlords who rent their rooms and houses to people engaged in the sex trade, to taxis and matatus ferrying sex workers from one hot spot to another in their nocturnal journeys; there is a whole local economy ecosystem that does well if sex workers are active and earning money. What we are observing here then, is the bodily labor of sex workers as an unacknowledged, yet important part of the global capitalist

Beach in Mombasa, 2023. Photo: Eglė Česnulytė.

(gendered) extractive processes, both historically and today. It allows exploitation of local populations by providing fractional and commercialized social reproductive services that are needed for commodity frontier expansion.

Sex work as a family labor of precarious households

Agriculture is another cornerstone of the Kenyan economy – the sector accounts for 65% of the export earnings, provides livelihood for more than 80% of the Kenyan population, and is the main driver for the non-agricultural economy, providing inputs and markets for sectors such as construction, transport, tourism, education, and manufacturing (FAO 2023). Most Kenyans employed in agriculture are smallholder farmers, rely on family labor,

consume most of their production to sustain themselves, and are characterized by high poverty rates and food insecurity (Kimathi 2022). While commercial agriculture is an old colonial commodity frontier that incorporated Kenya into global capitalist commodity regimes through tea and coffee cultivation, in recent decades horticulture – and new crops that came with it - became important in the Kenyan economy as well.

Jobs in agriculture are highly gendered – on commercial farms, permanent and better-paid jobs tend to employ men, and women usually are daily laborers or employed on temporary, flexible contracts that often do not guarantee regular hours or a living wage (Kaaria 2022, Dolan 2005). On smallholder farms, family labor is also often divided following a patriarchal logic, which puts women at a disadvantage (Aju et al 2022).

The gendered nature of agricultural jobs means that rural households are highly vulnerable to the loss of a male breadwinner, and struggle if the male head of household loses his job, leaves the family or dies. In cases where the male breadwinner is lost, women's options are often limited locally, and many choose to migrate to town with the hope of being able to send remittances to their families. Kimathi (2022) found that remittances from family members is one of six key diversification strategies for rural smallholder households in Kenya. In my research, most women selling sex in Mombasa were sending remittances back to their rural families to support their parents, siblings, and, sometimes, their children financially.

The fact that sex work earnings are relied upon by rural families in distress is again nothing new in Kenya. White (1990) has documented how the prices charged and patterns of prostitution in colonial Nairobi were closely linked to

Fields and railway track next to sex workers' drop-in clinic in Mowlem, Nairobi, 2023. Photo: Eglė Česnulytė.

weather conditions and harvests in rural areas; when harvests failed, rural families would send daughters to work for cash in the city. So, for some women, selling sex, performing family labor, and contributing income allows survival and serves as a safety net for precarious rural households that would not survive otherwise. This is important when considering the role smallholders play in commercial agriculture – many are farming commercial crops that are the core of the Kenyan economy on contract or without a contract.

Considering sex workers traveling to urban areas to commercialize social reproductive labor and earn income that would then help to reproduce their rural families allows us to see the duality of sex work in the Kenyan context. Both by supporting laborers whose social reproductive needs are not met, and by sending remittances back to rural families, sex workers enable other capitalist processes that are exploitative and make social reproduction difficult for parts of populations.

View of Dandora slum from one of Nairobi's sex worker drop in clinics, 2023. Photo: Eglė Česnulytė.

Contesting gender unequal capitalist structures through independent accumulation

While sex work enables extractive capitalist practices as discussed above, it is also a labor that contests local patriarchal structures by allowing independent capital accumulation for women who otherwise would not be able to accumulate independently. Not all women support their birth families and send remittances back to their places of origin. Many women who do not fit or do not want to fit into traditional community structures find their way to cities and live independently while selling sex.

Bujra (1975, 1977) and White (1990) demonstrate how some women who sold sex in colonial Kenya broke away from their birth families, created networks of kin crossing ethnic divides in urban areas, and accumulated wealth that was usually not available to other women. Many became landlords, renting rooms to new generations of urban poor, and living relatively comfortable lives. Similarly, today, some sex workers manage to accumulate enough money and invest those savings into commercial activities that go beyond traditional 'women's jobs.'

While many build houses and become landlords just as their predecessors in colonial times, today women use their savings to open beauty salons and shops, and also move in businesses ranging from butchery to transport businesses as my research indicates. Some even manage to make a transition and end up working in civil society organizations or NGOs, as, for example, their experience of being a sex worker is a valuable asset in the HIV/AIDS industry.

What we observe here then, is that sex work contests local patriarchal structures and allows women to independently accumulate and reinsert themselves in a more advantageous position in local capitalist structures. As a result, many choose not to remarry, establish themselves as heads of households and live independent and comfortable lives.

Body as commodity frontier

Different bodies are integral parts of commodity frontiers in different ways. While some bodies labor in fields and factories, other bodies ensure that they make it to the workplace in the first place, are nourished, reproduced, and taken care of. While some bodies are clearly in rural or urban parts of Kenya, other bodies are in motion, so their labors in reproducing multiple bodies as clients or as family members are difficult to classify as rural or urban. What is important, though, is that the gender of bodies determines the ways in which they are incorporated in contemporary capitalist structures and the range of possibilities available for them.

Women selling sex extract money from men who have access to better financial opportunities than women in the local and international economy. Sex workers' bodies are used to provide social reproductive labor in exchange for payment. Because some workers are reproduced by sex workers, they can continue being exploited in their jobs in key economic sites – tourism, agriculture, industries, and so on. Distressed rural families that rely on sex worker remittances can also continue being exploited by global capital. So, sex work is a commodity frontier that expands and enables capitalist logics through commercialized social reproductive labor. It also is a labor that contests some local, patriarchal, capitalist arrangements by allowing women to accumulate independently and reinsert themselves in local economies at more advantageous positions.

References

Aju, S., Kramer, B., & Waithaka, L. (2022). *Edutainment, gender and intra-household decision-making in agriculture: A field experiment in Kenya*. International Food Policy Research Institute, Washington DC.

Bujra, J. M. (1975). Women "entrepreneurs" of early Nairobi. *Canadian Journal of African Studies/La Revue canadienne des études africaines*, 9(2), 213-234.

Bujra, J. M. (1977). Production, Property, Prostitution.'Sexual Politics' in Atu (Production, propriété, prostitution: la politique du sexe à Atu). *Cahiers d'études Africaines*, 17(65), 13-39.

Česnulytė, E. (2019). *Selling sex in Kenya: gendered agency under neoliberalism*. Cambridge University Press.

Česnulytė, E. (2017). Gendering the extraverted state: the politics of the Kenyan sex workers' movement. *Review of African Political Economy*, 44(154), 595-610.

Dolan, C. S. (2005). Benevolent intent? The development encounter in Kenya's horticulture industry. *Journal of Asian and African Studies*, 40(6), 411-437.

FAO (2023) Kenya at a glance, accessed via: https://www.fao.org/kenya/fao-in-kenya/kenya-at-a-glance/en/ on 15/02/2023.

Federici, Sylvia (2004). *Caliban and the Witch*. Autonomedia.

Fraser, Nancy (2015). Legitimation crisis? On the political contradictions of financialized capitalism. *Critical Historical Studies*, 2(2), 157-189.

Kaaria, S. K. (2022). *Investigating the Working Conditions of Women in the Flower Farms in Thika Sub-county in Kiambu County, Kenya* (Doctoral dissertation, University of Nairobi).

Kabeer, N. (2014). *Gender & social protection strategies in the informal economy*. Routledge.

Kenyan Ministry of Tourism (2020) Working Document: *Draft Revised National Tourism Policy on Enhancing Sustainable Tourism in Kenya*. Accessed via https://s3-eu-west-1.amazonaws.com/s3.sourceafrica.net/documents/120818/Policy-Tourism-Draft-May-2020.pdf on 15/02/2023.

Kenyan National Bureau of Statistics (2020) Economic Survey 2020. KNBS, Nairobi.

Kimathi, L. (2022). *Assessment of the Effects of Diversification of Livelihood Strategies on Agricultural Production and Household Income in Nyamira County, Kenya* (Doctoral dissertation, University of Nairobi).

Kinyanjui, M. N. (2014). *Women and the informal economy in urban Africa: From the margins to the centre*. Bloomsbury Publishing.

Omondi, R. & C. Ryan (2020). "Romantic Entertainers" on Kenya's Coastal Tourism: A Case of Sex Tourism, *Leisure Sciences*, 42(3-4), 358-374.
Ruchman, S. G. (2017). Colonial construction: Labor practices and precedents along the Uganda Railway, 1893-1903. *The International Journal of African Historical Studies*, 50(2), 251-273.
Van Onselen, C. (2001). *New Babylon, new Nineveh: everyday life on the Witwatersrand 1886-1914*. Jonathan Ball Publishers.
White, L. (1990). *The comforts of home: Prostitution in colonial Nairobi*. University of Chicago Press.

Eglė Česnulytė is a Senior Lecturer in International Development and Politics at the School of Sociology, Politics and International Studies, University of Bristol, UK. Her work explores the ways in which gender functions to include or exclude individuals from opportunities related to their everyday lives. She has been working with Kenyan women selling sex and their organizations since 2010.

*All photos provided by the author.

Correspondence:
Eglė Česnulytė, e.cesnulyte@bristol.ac.uk.

Cite this article:
Česnulytė, E. (2023). "Sustaining and Contesting Commodity Frontiers: Gendered Bodies and Sex Work in Kenya." *Commodity Frontiers* 5: 10-17. doi: 10.26300/bfa4-dp24.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.

Fertility Frontiers: A Decolonial Materialist Feminist Perspective on Assisted Reproductive Technologies in Israel/Palestine

Sigrid Vertommen

Keywords: fertility frontiers, assisted reproduction, Israel/Palestine, biocapitalism, settler colonialism

Abstract: Over the past years, the Republic of Georgia has emerged as an important surrogacy hub at Israel's "fertility frontier," where cheaper and more readily available surrogates are recruited to make Israeli couples' reproductive dreams of a biologically related child come true. In this article, I explore how an acute decolonial materialist feminist perspective on "frontiers" can urge us to conceive of them not only in "territorial" terms of land, soil, and minerals, but to also include the gendered territories of bodies, biologies, and "the flesh," and the ways these are extracted, mined, and commercialized in both older and contemporary bioeconomies. I argue that reproductive technologies operate as a demographic and a commodity frontier in Israel/Palestine, at the crossroads of ongoing histories of biocapitalism and settler colonialism.

In April 2020, while countries across the globe were closing their national borders to foreigners in response to the imminent Covid19 threat, seven Israeli couples were allowed to pick up their long-awaited surrogacy babies in Georgia. An Israeli newspaper reported that in coordination with the Israeli Embassy in Georgia and Israel's Ministry of Health, a private plane was flown in and out of Tbilisi, with 14 Israeli intended parents, their 8 surrogacy babies, and a pediatrician with medical equipment on board, despite the ban on doctors leaving Israel.

Over the past decade, Georgia has transformed into a popular destination for infertile Israeli and other international couples who want to have a biologically-related child via surrogacy. A recent report by the Knesset Research Centre suggests that 519 babies have "returned" to Israel between 2011 and 2017, born to Georgian surrogates. Commercial surrogacy for heterosexual couples has been legal in Israel since 1996. In July 2021, the Israeli Supreme Court ordered the government to lift the surrogacy restrictions for same-sex couples and single men.

In recent years, however, a booming transnational surrogacy industry has emerged in Israel that caters to the reproductive needs of both gay and heterosexual intended parents who wish to circumvent the complex bureaucracy of the Israeli surrogacy procedure. They look for cheaper and more readily available surrogates in countries in the Global South and East, where surrogacy is either allowed or unregulated. After Thailand, India, Mexico, and Nepal prohibited or restricted international surrogacy over the past years, Georgia has emerged as an important surrogacy hub at Israel's "fertility frontier."

Israel/Palestine is by no means the only country in the world where assisted reproductive technologies (ARTs) and services appear as important sites where families, markets, and state power are made, remade, and unmade. The global fertility market is estimated to reach USD 40 billion in revenue by 2026, with countries like the United States, United

Kingdom, China, and India at its epicenter (Databridge Market Research, 2019). Israel/Palestine, however, offers an interesting case to explore how ARTs materialize as capital-colonial frontiers of accumulation and demographic replacement.

In my upcoming book *Fertility Frontiers: Understanding Israel/Palestine through the Lens of Assisted Reproductive Technologies* (Pluto Press), I explore how an acute decolonial materialist feminist perspective on "frontiers" can urge us to conceive of them not only in "territorial" terms of land, soil, minerals, but to also include the gendered territories of bodies, biologies and "the flesh" (including egg cells, sperm, wombs, and other reproductive tissues and organs) and the ways these are extracted, mined, and commercialized in both older and contemporary bioeconomies. This is what the Guatemalan communitarian feminist Lorena Cabnal (2019) evocatively termed *cuerpo territorios* or body-territories, with (women's) bodies as the first territory that has to be defended against the structural violence of hetero-patriarchy, capitalism, and colonialism (an image of *cuerpo territorios* appears in the Introduction to this Issue of *Commodity Frontiers).*

But what is so particular about assisted reproductive technologies in Israel/Palestine?

In Israel, assisted reproductive technologies and services like surrogacy—but also in vitro fertilization (IVF), egg cell donation, egg freezing, and preimplantation genetic diagnosis (PGD)—are widely accepted and remarkably popular. Research shows that Israelis are not only the world's biggest consumers of fertility treatments, but the country also houses the highest number of fertility clinics per capita in the world (Birenbaum-Carmeli, 2010). This "cult of fertility," as the Jewish British writer Lesley Hazleton (1977) termed it, can be partially explained by the unprecedented generosity of the Israeli government in subsidizing fertility treatments. In the case of in vitro fertilization, for instance, for every female citizen—regardless of religious or marital status—the state funds an unlimited number of IVF cycles up to live births of two children within the current relationship (Shalev & Felmayer 2012).

In explaining this remarkably pronatalist stance, many scholars, policy, and news makers refer to the centrality of reproduction in Jewish culture and history. Some point to the first religious commandment (mitzvah) that prescribes Jews "to be fruitful and multiply and replenish the earth." Others refer to the violent history of Jewish communities in Europe and Russia and the virulent waves of anti-Semitism they faced, culminating in the Holocaust, through which individual procreation increasingly became a matter of collective Jewish survival (Kahn, 2000; Teman, 2010; Ivry, 2010).

While these cultural narratives of Jewishness obviously matter, my work advances a decolonial materialist feminist perspective on (assisted) reproduction in Israel/Palestine. Building further on the groundbreaking work of Rhoda Kanaaneh (2002) and Michal Nahman (2013), my work rethinks Israel's fertility regime as a stratified or selectively pronatalist one, which materializes at the intrasecting logics of capital accumulation and demographic replacement. By conceptualizing different reproductive technologies including (transnational) surrogacy, egg cell donation, in vitro fertilization, and sperm smuggling as capital-colonial frontiers that operate at the crossroads of ongoing histories of settler colonialism and biocapitalism, the book puts forth a different set of questions about Israel's fertility regime: Who is/isn't encouraged to reproduce? Who does the work of (assisted) reproduction? How is fertility capitalized on? What do ARTs reproduce besides babies and family happiness?

I argue in the book that, on the one hand, ARTs operate as a demographic frontier aimed to consolidate a Jewish demographic majority in a Jewish State at the expense of indigenous life. Although legally available for all Israelis, it has been argued that Israel's generous fertility policies are primarily designed to benefit its Jewish citizens and not the Palestinian or "Arab Israeli" community (Portuguese, 1998; Birenbaum-Carmel & Carmeli, 2011). The latter's supposedly high fertility rates are

presented within Zionist discourse as a ticking demographic time bomb or as a threat to Israel's national security.

Returning back to the example of surrogacy, when Israel introduced its national surrogacy law in 1996, it set in place a state committee to approve commercial surrogacy agreements between the Israeli surrogate and the intended parents. The law includes a strict religious clause, that requires the surrogate and the intended mother to share the same religion. This means that a Jewish Israeli woman cannot gestate a baby for a Muslim or Christian (read Palestinian) woman, or vice versa, without the approval of an exceptions committee. As Palestinian women rarely serve as surrogates in Israel (also because of religious restrictions), this also means that Palestinian women are not benefiting from this reproductive service. Moreover, in looking for available and low-cost surrogates and egg cell providers to meet the increasing surrogacy demand in Israel, the Israeli surrogacy sector avoids any dependency on an indigenous reproductive labor force of Palestinian surrogates, but has opted to outsource the work of ovulation, gestation, and parturition to women in the Global South and East (Wolfe, 2016).

This brings me to the second point that ARTs also operate as a commodity frontier in which a thriving reproductive industry increasingly capitalizes on Israel's (stratified) fertility policies (Moore, 2015). In the case of surrogacy, for instance, there are more than a dozen Israeli surrogacy companies that coordinate the medical, logistical, and legal procedures of national and international surrogacy arrangements and that broker between the reproductive demands of the intended parents and the availability of (overseas) egg vendors and surrogate carriers in countries like Georgia, Ukraine, and Cyprus. Sometimes Israeli fertility entrepreneurs also set up proxy clinics or agencies in these countries, or send Israeli doctors to staff these local clinics (Nahman, 2013).

Notwithstanding the smooth advertising language on their websites —with slogans like "surrogacy is a gift of life" and "priceless family happiness"—these surrogacy agencies are commercial companies that charge high fees for their services. In some cases, they charge up to a third of total surrogacy costs. These companies develop numerous marketing strategies to promote their services and to make a profit, such as guarantee programs that guarantee a take-home baby, or egg cell sharing plans in which two couples share the egg cells from one donation cycle. Overall, Israel's fertility industry is profitable because of techno-scientific innovation and the outsourcing of reproductive labor to low labor cost countries.

Assisted reproductive technologies, services, and practices provide a powerful lens to "see through" and understand how settler colonial and biocapitalist frontiers operate in Israel/Palestine, including through processes of Zionist state formation, the emergence of pioneering reproductive markets, racialized stratifications of Jewish vs Arab populations, and the mobilization of women's reproductive labor and bodies as (re)producers for the family, the nation, and the global market.

While ARTs shed an interesting new perspective on processes of demographic replacement, capital accumulation, and labor exploitation in Israel/Palestine, they are also mobilized by Palestinians as a fertile site of resistance. In May 2020, a month after the Georgian surrogacy babies "returned" safely to Israel, Palestinian national television broadcasted a video interview with Sana'a Daqqa, the wife of long-time Palestinian political prisoner and writer, Walid Daqqa, who has been serving a life sentence in an Israeli prison since 1985. During the interview, Sana'a presented their three-month-old baby girl Milad (Arabic for birth) who was born via artificial insemination after Walid managed to smuggle his sperm out of prison.

In the past few years, Palestinian political prisoners —who are denied conjugal visits— have started the reproductive tactic of sperm-smuggling in an attempt to make proxy families. After the sperm is smuggled out of prison, it is then rushed to fertility clinics in Nablus or Ramallah where the wives of the prisoners use

it to achieve a pregnancy via artificial insemination or in vitro fertilization.

According to a recent report, this has resulted in the birth of at least 63 Palestinian children since 2003, in what Palestinians call a life-affirming struggle for freedom, self-determination, and reproductive justice. When presenting baby Milad to the camera, Sanaa said: "Walid freed himself from prison with the birth of Milad...this is the greatest victory and defiance." Nadera Shalhoub-Kevorkian (2015:160) concluded in her research on birthing practices in Jerusalem that for many Palestinian women, "the willful act of deciding to continue surviving and giving birth is itself perceived as political – as subversion, revolt and agency."

References

Birenbaum-Carmeli, Daphna and Yoram Carmeli (eds.). 2010. *Kin Gene, Community: reproductive technologies among Jewish Israelis*. New York: Berghahn Book

Hazleton, Lesley. 1977. *Israeli women: the reality behind the myths*. New York: Simon and Schuster.

Ivry, Tsipy. 2010. Embodying Culture: Pregnancy in Japan and Israel. Rutgers University Press.

Kahn, Susan Martha. 2000. *Reproducing Jews: a cultural account of assisted conception in Israel*. Durham: Duke University Press.

Kanaaneh, Rhoda. 2002. *Birthing the nation: strategies of Palestinian women in Israel. Berkeley*: University of California Press.

Moore, Jason. 2015. *Capitalism in the Web of Life: Ecology and the Accumulation of Capital*. London: Verso.

Nahman, Michal. 2013. *Extractions: An ethnography of reproductive tourism*. Hampshire: Palgrave Macmillan.

Portuguese, Jacqueline. 1998. Fertility policy in Israel: the politics of religion, gender and nation. Westport: Praeger.

Shalhoub-Kevorkian, Nadera. 2015. Security Theology, Surveillance and the Politics of Fear. Cambridge: Cambridge University Press.

Teman, Elly. 2010. Birthing a Mother: The Surrogate Body and the Pregnant Self. Berkeley: University of California Press.

Wolfe, Patrick. 2016. Traces of history: Elementary structures of race. London: Verso.

Sigrid Vertommen is Assistant Professor at the Sociology Department of the University of Amsterdam, and Senior Research Fellow at the Centre for Research on Culture and Gender at Ghent University. Her work examines the global politics of (assisted) reproduction at the crossroads of ongoing histories of colonialism, heteropatriarchy, and biocapitalism. Currently, she is writing her book, *Fertility Frontiers: Israel/Palestine through the Lens of (Assisted) Reproduction* (Pluto Press), building on her research on the political economy of assisted reproduction in Israel/Palestine, and on global surrogacy chains between Israel/Palestine and Georgia.

*All photos provided by the author.

Correspondence:
Sigrid Vertommen, sigrid.vertommen@ugent.be.

Cite this article:
Vertommen, S. (2023). "Fertility Frontiers: A Decolonial Materialist Feminist Perspective on Assisted Reproductive Technologies in Israel/Palestine." *Commodity Frontiers* 5: 18-22. doi: 10.26300/2f8f-0073.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.

Weaving Decommodified Visions of Bodies, Water, and Territories: An interview with Fany Lobos Castro

Fany Lobos Castro

Keywords: water, body, territory, Chile, decommodification, feminism

Abstract: Fany Lobos Castro is an activist-scholar based in the rural territories of Maule Sur, Chile. The women of these territories are struggling to defend their water, their bodies, and their territories against expanding agroindustry and plantation forestry, and against the privatization and commodification of water, land, and nature. Fany Lobos Castro is active in these struggles while also working within academia. Her work explores the ways in which a deep appreciation of the interconnectedness of bodies, water, and territories offers a touchstone for resistance struggles against commodity frontiers, and a vision of a different way of living. This interview, carried out by Katie Sandwell, with the support of an interpreter, responds to her article, *Water-body-territory. The scars and re-existences of rural women in the Maule Sur precordillerano of Chili*, published in Spanish in the journal *Ecologia Politica*. The discussion aimed to draw out and explore themes relating to commodity frontiers and the body. The interview transcript has been edited for length and clarity.

Katie Sandwell[1] (KS): Thank you for making the time for this discussion! In your article you powerfully express the triad of water-body-territory, as a "living hybrid." Can you say a bit more about this idea, and how it confronts and resists understanding of bodies, waters, and territories as "resources" or commodities?

Fany Lobos Castro (FLC): I have thought a lot about this question, which is related to the moment in which I wrote this article, two or three years ago while living in Spain. I wrote the article in the context of my PhD research, where I was reading a lot about rural territories and dispossession. But this was always academic writing about these issues: nothing from us; nothing from the perspectives of the women who live in these territories.

In this context, living in Europe, I started to see my own condition as an immigrant, and to see the marks on my body related to my being from a rural territory – to being a peasant woman, from a peasant family. I come from a peasant family, but a very particular one. The main characteristic of which is the importance of the women in the family. My mother and especially my grandmother were women who decided to live "alone" – with no husband and away from traditional family structures. They tried to make a difference in that context. They were also women who had a small piece of land. That is not very traditional for peasant families in Chile, where usually it is men who have the land. The challenge for me was how to not deny that story. How can I carry and recognize the story of my family in this work?

From this memory of my family these three words emerged and came together. This drew upon contemporary analysis about the relationship between water and territory – for instance Alexander Panez's work on water and territory – but it's not just from these

[1] Katie Sandwell interviewed Fany Lobos Castro about her work. Special thanks to Alexander Panez for his support with interpretation and translation.

contemporary sources. The three words also come together in ancestral and traditional views [from Chile]. Water is not separated from our lives as humans; it is not divided from other living beings in the Earth; we all exist in a relationship with the land. This is a way of living that is based on the ancestral knowledge that these things always came together.

At first I thought we could think of these three words as a hybrid. But then, I began to see that it is not just that the three words or concepts come together, but that they mutually influence or constitute each other, from the beginning. The border between the concepts is not so clear. The border or the boundary between the body, the territory, and the waters is not clear. They exist in their mutual influence and confluence.

We can see this mutual influence between the three concepts in the way that all our lives depend on the flows of water: our rituals, our lives with our families, our children, our communities, our trees. For example, countless trees die when the big powers – states and corporations – steal the water.

So, we understand water not as an element or a resource but as a being in its own right. It is a being that makes possible the creation and the reproduction of the territories.

World Water Day is approaching (22 March) and one of the slogans that civil society and movements are mobilizing around is "water is for the people." But, in a certain way, that is wrong. Water is not for the people. Water is for the water. We connect to the water, and make a relation to it, but we are not owners of the water. In this example, these three words, which we are bringing together, start to disintegrate or be separated again.

So, today we are in a struggle. This is not a struggle to recover or return to the past. It is not a nostalgic or romantic looking backward to past ways of being but a concrete response to new realities, new threats, new forms of dispossession. We need to create new ways to face these new moments of dispossession. Invoking this relationship, this triad, these three words, is one way to confront these new moments of dispossession.

Rural woman with pick-axe. Photo: Fany Lobos Castro.

We need to re-learn how to hear the relationships between land-body-territory as a symphony, not three separate and distinct things. We need to understand that there are diverse ways of understanding these things, diverse ways of living life.

This triad of water-body-territory is one possible triad, but others are also possible. This triad responds to the territory of Maule Sur and everything that people there are living through, in terms of struggles and dispossession around water. But it is only one possible construction. What is critical is to break the dichotomy of progress and modernity, that tells us that the only way to understand the world is as separate pieces – trees, land, water, forests, bodies. This understanding is the root cause of the destruction that we are facing, in our territories and in the whole world.

The idea of progress, development, modernity tries to make us understand ourselves as individuals, and shows only one possible way of living. This other way of understanding water-body-territory is a subversion, which tries to invert the order of modernity, and shows that we need to build new ways of relating between the self and others. There are other ways of knowing, and other ways of living.

KS: In the article, you mention some concrete and courageous examples of resistance to the commodification of water, through directly reclaiming access to community water. What has been the response of the state to these acts of resistance? Is this shifting?

FLC: This year we have had huge fires in the South of Chile – more than 300,000 ha have been burned in mega-fires. Independent and Left media in Chile have tried to tell this story, and to relate it to the extractivist model of forestry companies working in the region [whose practices of large-scale mono-cropping of non-native tree varieties have vastly increased the risk of such fires]. However, in the territory where I live, we have very limited access to the internet, so we can't easily access these social networks to support us.

So, the women of Maulo Sur instead staged direct actions, blocking roads and especially the main road that services one of the forestry companies in the high part of the valley. They called for the Governor of the Province to come to resolve the situation. The State, represented by the governor, went to this territory and was confronted with the communities, even as the forestry company was calling for the state to resolve the situation by clearing the roads. This governor is someone who is related to social movements. So, this is one of the contradictions of this new government of Boric, which is supposedly more "sensitive," more progressive, and more related to social movements. But, in the end, the response of the state is really a response from the companies, who are pushing to maintain extractivism and dispossession.

However, there is an even deeper contradiction. The state maintains a vision of water as something – an object, a resource – that needs to be controlled, and that needs to be appropriated by the state. The state is trying to re-vindicate an idea of "citizenship," but this vision is not a vision that works for rural areas. The idea of citizenship is built from ways of belonging to a city – the political model of the polis. It doesn't recognize peasant organization and the peasant way of life. Likewise, the state doesn't understand territories and landscapes as united wholes, but as divided parts, so they push to fragment and divide territories.

Sometimes, actions from the state are not directly to steal or grab land, but to set traps for peasants. They promise development. However, this development is always of a certain kind, which can be deeply destructive to the peasant way of life. They bring, for example, a food export economy – growing hazelnuts or avocado for foreign markets, installing a model of agro-export economies in the name of "development."

KS: In addition to direct resistance, you mention defense of commons, and I know you have also worked on community self-management of water. Drawing on those experiences, can you say a bit more about what these alternatives to commodification look like? What are the alternate realities that women are defending and (re)creating in the Maule Sur foothills? (And elsewhere, if you wish to discuss).

FLC: Ten years ago we believed that the key strategy was just to make boycotts, to take to the streets, block the roads, and denounce what

companies and the state are doing. But today we believe that we need to reconnect with the peasant way of life. We need to come together, and to create. This can happen at all scales – when you grow your own garden, you can still do this in a way that connects to others. This is an action that starts at the local small level but connects with your neighbor, with your community.

So the goal is the community and the commons, but this is not merely for the future but something we must build now. We are working to create spaces for counter-hegemonic organizing. The work of counter-hegemony is not so difficult. It is easier for people to think of something very concrete. When you put your hands in the soil, you start to make things in the land within your community, and then things begin to happen which change your vision of life. The key thing to understand is that we must go beyond ourselves as individuals. We cannot do this alone, by ourselves. It is a lie. We need each other. We need our (women) comrades; our neighbors, who are mainly women. These relations between women at the community level are very important. We need to come together and collectively create new ways of sustaining both human and more-than-human life.

It is very fashionable to talk about "community" but too often this discourse is an empty concept, making no impact in real social relationships. We need to make "community" into a verb, relating with creation, with doing, with feeling, with living. This can take the form of collectively recovering ancestral seeds, for example, of collectivizing land, of freeing our rivers. But the key fact is that these actions are not individual, but collective. This is not something I do, but something we do together.

KS: What do these collective forms look like? Can you say more about the alternatives that communities are building?

FLC: As I mentioned before, the idea of "citizenship" is based on urban life, where most of the beings or elements that make life possible are controlled by private entities. The conditions that make life possible are very different in rural areas. I don't want to say that everyone needs to be a peasant, or that we cannot create other ways of living in the city, too. But when we are thinking of the peasant way of life, this is not compatible with the ways of organizing lives and politics that are proposed by and for the city.

If we can break down the idea of individuality and ownership – this is my house, my space – and instead organize in a collective way, where life is at the center, this would be a huge blow to the commodification of life. It is showing that we are effective, that we are alive in another way. When we do this, other ways of thinking and being begin to emerge which cannot be understood within a commodified vision of life.

It is very important that these collective ways of life are not isolated but embedded in networks. We already see the strength and importance of networks in crises: when there is a fire in the mountains, the first people to arrive are the networks, communities of solidarity. Because these ways of organizing allow us to feel what is happening to the other, and to react swiftly. In this way, our water, our land, our territories can be increasingly protected from the logic of the market, because we have a deeper relationship to each other. We are woven together. If we stay alone, if the waters are alone, or the territories, or the bodies of the women, of the children, of the men – if we are alone we are like individual threads. If we are woven together we cannot be so easily divided or destroyed.

KS: You highlight the international dimension of these commodity frontiers – that commodification of water, of territories, of labor, and of women's bodies is being driven partially by extractivist agribusiness feeding the countries of the North. What kinds of international solidarities are needed to struggle against these processes? From activists? From academics?

FLC: There are always some types of solidarity that can be useful: denouncing abuses, boycotting companies (which are mostly

Northern companies, grabbing land, water, and territories in the South) and so on. But the main struggle is to give space to other ways of being, to other ways of feeling. To let other voices shout out. It is not that you need to give a voice to people who do not have one: they have a voice. You need to give space to those voices.

Another thing is to try to build this way of thinking in other places, in your own countries and territories. We are trying to build a new way of understanding and relating, a new relation with water, bodies, territories – maybe this can be helpful in your struggles, in the Netherlands or elsewhere.

This is not my problem alone. It is not a problem of my community, or of peasants. This is a problem of the world system. I also want to know about the water you are drinking: what is the story of that water? What is the memory related to that water? What are the traditional and ancestral relations that were built along that water, and in those territories?

And I want to know: what do you feel when you smell a fresh tomato? What memories are evoked? Because the main fight is the fight you are carrying out in your own territories, not just your solidarity with another territory. Your world and my world are not separate worlds.

We have our own ways of understanding the sustainability of life, but the other beings that we need to be able to live our lives are the same. We have to understand that one world will not survive without the other. Food sovereignty is possible and necessary, not just in Chile but in the Netherlands. The native forests in Europe must be valued, just as in Latin America. Our whole world needs to put human and more-than-human life in the center. This is true in our political struggles, in our lives, and equally in scholarship and academia.

Fany Lobos Castro is a Chilean activist and researcher, part of the feminist peasant movement, and a member of the collective Feminista (En)Candil-Ando in the foothills of the Andes in Chile. From here she weaves together diverse struggles and forms of resistance to extractivist processes, with a focus on peasant territories and ways of living.

Katie Sandwell works with the Transnational Institute, an international activist think tank headquartered in Amsterdam. Katie's work with TNI centers on agrarian and environmental justice, food sovereignty, just transition, public services, and alternative economic paradigms.

*All photos provided by the author.

Correspondence:
Fany Lobos Castro, fanylobos84@gmail.com.

Cite this article:
Lobos Castro, F. (2023). "Weaving Decommodified Visions of Bodies, Water, and Territories: An interview with Fany Lobos Castro." *Commodity Frontiers* 5: 23-27. doi: 10.26300/192e-fe83.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.

Contesting Harm at the Roots: Some Thoughts on The Prison System from a Previously Incarcerated Activist

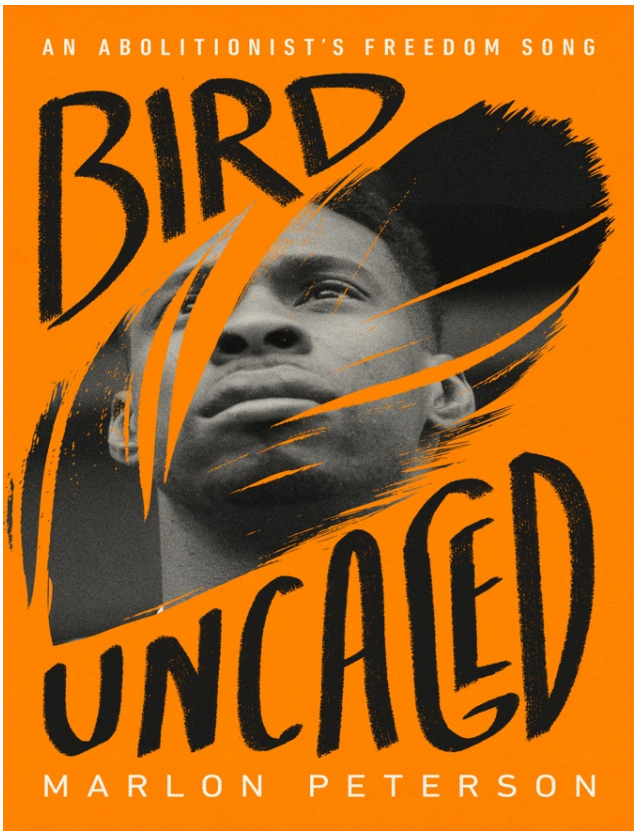
Sithandiwe Yeni and Marlon Peterson

Keywords: abolition, decarceration, solidarity, Marlon Peterson

Abstract: The prison is a commodity frontier. Building on the work of Ruth Wilson Gilmore and Abolitionist Geographies, the prison-industrial complex is indeed a space where especially Black bodies are disciplined and commodified, where accumulation is achieved through structured marginalization and control of those bodies as "surplus," where denigration of racialized "others" is achieved through ongoing bodily and emotional harm that perpetuates harm, and where resistances contest the very roots of the problem. In this contribution, Stha Yeni speaks to Marlon Peterson, a self-described inspiration whisperer, writer, criminal legal system expert, and public speaker. Peterson spent a decade in a New York State prison, subsequently working in service of, and collaboration with, communities on the prison pipeline and current and formerly incarcerated people. He is the host of the DEcarcerated Podcast and recently published a book titled, *Bird Uncaged: An Abolitionist's Freedom Song*. In this conversation, Yeni and Peterson discuss the concept and practice of abolition, international abolitionist solidarity, community learning and engagement, and breaking chains of harm.

Stha Yeni (SY): Thanks very much for agreeing to do this interview. To start, tell me a little bit about your background and the work that you do.

Marlon Peterson (MP): I would describe myself as more of a writer among other things. Most of my work has been about advocating on behalf of people who have experienced violence, gun violence particularly, but also folks who have experienced the violence of incarceration. Over the years, I've done a lot of work with young people who come from communities of people who are prisoners or from a prison pipeline. So, I've worked alongside, mentored and created programs for young people in my city and most recently I've done a lot of talks, but also a lot of learning and writing about people who experience all those things beyond my community and in different parts of the world.



SY: So, when you say you work with young people from those kinds of communities, what exactly do you do with them?

MP: Well, for most of it, it's me taking time to learn about the root causes of them getting involved in the crimes they get involved in. It's more of a conversation, I don't really come to the community unless there's a long standing relationship, I have with them. I don't go to the community and say, "okay so this is what I'm going to do for you", but it's more so an opportunity for me to learn and share stories of other people. Let me give an example of when I visited a jail in Durban, South Africa. Over there, I did a workshop, and the workshop was about connecting the various struggles of people in other hoods, so they understand that what they experience there is more or less the same experience other prisoners get in the United States of America. I wanted to convey a message to them and make them understand that there are communities of people who are struggling alongside them, who are paving ways for themselves and others. So, it's like solidarity.

SY: How did you get into doing the work that you do?

MP: Well, I went through it myself. You know, I did a bunch of time in prison myself, I experienced both sides of harm in my teenage years, so I got a lot of perspective. You know, spending time inside the prison, I felt there was a place for me to support and have an impact on people who are going through things just like me, so that's what I started doing from the inside. Impact them in a positive way that is.

SY: I want to talk a little bit about your book 'An Abolitionist's Freedom Song'. Firstly, in your own understanding how would you define an abolitionist and secondly, what motivated you to write that book?

MP: To answer the last part of the question, what motivated me to write the book is that like I said, the experiences that I had connected to other people and their stories, so I figured because I'm a writer, let me use this talent and write this book. I wanted it to connect with many people so they see themselves in it. When it comes to the abolitionist part, I did not start the book by saying "I'm going to write an abolitionist book," hence when you read the book, the word abolitionist doesn't come in until the last couple of pages of the book.

So, to answer your question about what an abolitionist is, I think the first and foremost thing is that an abolitionist is a person who is doing introspection, interrogation on themselves and how they interact with harm on both sides. The harm they have caused and the harm they have experienced. And getting into the root of why they feel about whatever is going on, whether they participate in harm or experience it. Also, how do we move beyond the initial instinct to want vengeance because people want that. I don't care who you are, even if you're the biggest abolitionist in the world. If someone does something to you or your family, your first instinct is to do something back to them. An abolitionist is committed to grappling with that.

So, when I'm writing that book, when you're reading it, you see how I experienced great harm and there is even a chapter where I speak to the person who sexually harmed me. So it wasn't about me saying "why did this happen to me", but it was me wanting to know the initial causes of you wanting to do that to me. When it comes to why I wrote the book, I feel that it was a necessary thing for me to do and when it comes to the abolitionist part, I mean it starts with the individual. I think the abolitionist must look within themself so that they can see where they are as a person/individually.

SY: Are you a member of any abolitionist movement in the US or anywhere else?

MP: Yes, I mean I work alongside folks and writers, so we come together as writers around this issue. We seek to use our words as a part of the movement and not only our bodies. There are also folks around the world who I've been in conversations with. Australia most recently, New Zealand and also my home country Trinidad and Tobago. So, I want to highlight that the prison police abolitionist movement is

something that is very much grounded in the American global north context in terms of activists. However, because of my travels and conversations with other people, I do know that it's definitely known across the world.

We still have to understand that it requires an understanding of specific contexts globally to apply any of these ideas. It's very different depending on where you're at and that's something I think those of us in America are working on or should be working more on in terms of understanding the way we want to influence these sorts of ideas outside of America. We need to understand that in all parts of the world, there needs to be a shift in how we communicate with other people.

SY: I think you've touched a bit on my next question, but I was going to ask if you could say a little bit more about the status of these abolitionist movements in the US, like are they big? Are they influential?

MP: Well, I want to say yes. I mean we are a lineage of people who have been advocating this since the 60s and 70s. So, with what folks are doing now and what I'm a part of, I want to make it clear that we're not the beginners of it. We're in a lineage of a lot of other folks. We go back to the abolition movement of slavery in the US. These are the descendants of the same thing. In terms of what's happening now, I do believe that the verbiage of abolition or the ideas around it has definitely caught on with us here in America. People have it on their Twitter handles, we have an abolitionist lawyers movement and abolitionist social workers.

And that's good, it's good that people are attempting to interrogate and build out abolitionist sorts of movements in their fields of work. And that's what it's about. Abolition is something we have to build, it's not like math where you get a direct answer, no. It's something that is built. And that's why I say as a writer, I use my words to help build what that is. So, we're all still trying to create an abolitionist world. Obviously if we look in front of us, it's not created yet, but it's good to see that there is much more awareness, more conversation, and more dialogue around it.

SY: Do you have strong collaborations with the activists who are doing similar work but outside of the US?

MP: You know actually, there is somebody I recommend you speak to. Her name is Debbie Kilroy from Australia. She is somebody who also did a bunch of time in prison. There are people around the world like her who I have been in conversations with recently, probably a month and a half ago. These people are interrogating in their local context the abolitionist conversation. There is much more space for much more robust conversations to be had between those in the global north and those in and between the global south.

SY: I assume your work involves doing some research and I would like to know how you approach it. How do you select the communities where you engage and what would you say would be some of your methods of how you enter to build trust and relationships?

MP: I look for the toughest communities, and the way I do that is whatever relationship I have with people from that country or from people who work in NGOs. Also, definitely people from the artistic creative community and finding out who do I know, not only knowing who has access to the community but which people are from those communities. I don't go to any community without being welcomed in. There needs to be some form of introduction. There needs to be a humble approach.

So, when it comes to the research part, I try to do my research beforehand and see what I can read up, which videos should I watch and which people I should contact so they can help educate me on what's going on in that space. But I can say the best information I get is when I'm with the actual people from the community because they are the experts here. When I'm in these particular communities, I don't approach the people by saying "Hey I have these degrees, these books etc." No, I just tell them who I am, where I'm from and I tell them what I've been through and share my story. I don't go there with the approach to extract information from them. I want to be a person that builds communities and becomes some sort of bridge.

SY: I know part of your work also includes going to prisons. I know you speak to people in the communities where they live but you also go to prisons, and how is that process for you? How do you get access to the prisons?

MP: Okay, I'll give you one example. So in Trinidad and Tobago, how I got access to prison was because I knew some people there. I knew some judges in Trinidad and I met with some of the judges and asked them if I can connect with people who are in community programs. That is how I got access, through the people involved in community programs. And for the prison I went to in Durban, I knew a certain person his name is Chris, and he knew people that helped me gain access. However, in certain parts it depends on the kind of a municipality it is and how I am introduced. If they introduce me as a writer from America, then it's easier. I am actually going to another prison soon. So, basically knowing who I know, they help me get access and most importantly they introduce me as a writer who will be there to do a workshop for a book I'm working on.

SY: In this work that you do—and the work of many other activists that you have encountered and worked with—what are some of the alternatives that you are advocating for?

MP: Good question. Well, it all depends on where that country and city is. The reason why I want to engage with people in the community is because the alternative they may be thinking and talking about, they may not have access to people who can pull the strings or put the money in. So, the alternative for me is what people tell me what the alternative should be for them. I have my ideas, but depending on where you're at, it's different in terms of what people need or what people believe they need. So, for me, it's getting an idea.

An example would be in Trinidad for instance, there is a huge gun violence problem. Being in those communities, I've spoken to folks who are gang members and they would talk about getting stuff for kids. Like organizing money and buying book bags for kids and necessities for young people in the community. Which is amazing right, however, one of those members of the community stood up and said that he's happy that this is being done, however, there are people who are adults like him who can't read and you don't know what that does to those people. And that member looked like he was in his mid-thirties. So, after I left that meeting, the guy who chaperoned me in that community told me that that guy (who said he can't read) is actually a gang member in that area and that it took a lot for him to say that in front of everyone.

So, what I'm trying to say is that there is always a root driven reason for why people do what they do. I'm not saying this as an excuse that just because you do not have proper education that you should become a robber and a killer, no. But what I am saying is that there is a person directly impacted that is saying "this is something that's happening to me" and in some ways, that is a cage. I mean you can't read, that is why you're blocked off from a lot of things in the world.

So, to answer your question, when it comes to researching to advocate for what people want, it is important to go directly to the people because they are the ones that know what they want and what they need. They just need people to listen to them in a trusting and comfortable environment so that they can articulate it. Because at the end of the day, the government knows what these people need, but they just don't care.

People often think that people in these communities do not take care of themselves. However, when you actually go to these communities, you see that that's not the case and that it's actually quite deeper than that. And that is why I go to these communities, because I want to be that person who learns about all of this in a much deeper way.

SY: Thanks for that. I was in a workshop not so long ago with some activists and they were talking about thinking about alternative ways of "punishing." So, basically, how do we deal with harm and how do we hold each other accountable without taking people to prisons

and harming them even further. What are your thoughts?

MP: I know a colleague who always says, "you should do everything." And I think we're at a place where people are just trying to do different things to avoid jails and prisons. And I think that's good, its good that people are starting to have forgiveness for each other. But I also think it is extremely difficult work. And I say that because everyone's instinct is retribution. And that retribution is to personally hurt them back or to let jail hurt them. But it's also trying to get to the root of that so we can shift the language so we can humanize folks.

Right now in EL Salvador they are currently building the biggest prison in the world. And that has made El Salvador to have the number one jail in the world, surpassing the one in America. As we are having abolitionist conversations, the majority of the world still investing in prisons.

So to answer the question, it's really shifting the narrative. Here's the biggest one, what do prisons really do? If we want to be honest. What do they really do for us? Cause as we all know, prisons are spaces of harm. People harm each other there every day. So, at the end of the day, that's not really fixing the problem, I mean of course you have a couple of people who come out of prison doing well as a changed person. But it's not because of the prison, it's actually despite the prison. People like myself, I've done well for myself, however, the trauma and residual pain of prison hasn't left, and I still have to deal with that.

So, what I'm trying to say is that the abolitionists role is to get to the root and try new things, so people are thinking about other forms of accountability other than jails and prisons and stuff, that's them trying new things. But getting into the root and doing the work has to happen at the same time. Like if you look at it in the South African context, where violence is much more prevalent, I'm sure you'd do the history in that neighborhood and go deeper and deeper and using that sort of research, you would get into the root and find out what conditions in the community are leading them to harm each other. That would give you the root.

Now when it comes to your role, that would be creating different programs, being a part of justice circles, therefore we need to be in community together and work together building these alternatives and building these abolitionist visions.

Abolition is a crowdsourcing project, we need to be doing it together from all angles as intellectuals, as academics, as researchers, as practitioners, as gang members. We all must be doing it together, because now what we're producing is just more harm.

SY: Thank you very much for your time and generously sharing your experiences.

Sithandiwe Yeni is a PhD Candidate at the University of the Western Cape in Cape Town, South Africa. Her research is on land access, social reproduction, and notions of belonging in rural South Africa.

Marlon Peterson is the host of the *DEcarcerated Podcast*, an Atlantic Fellow for Racial Equity, and the founder and chief re-imaginator of The Precedential Group, a social justice consulting firm. Marlon spent his entire 20's inside of New York State prisons for his involvement in a crime as a teenager. During that time, he earned an Associate's Degree in Criminal Justice with Honors. He spent the last five years creating programs and curricula for men nearing release from incarceration and spearheaded and designed an experiential workshop for incarcerated men and college students.

*All photos provided by the author.

Correspondence:
Sithandiwe Yeni, sthayeni@gmail.com.

Cite this article:
Yeni, S. and M. Peterson (2023). "Contesting Harm at the Roots: Some Thoughts on The Prison System from a Previously Incarcerated Activist." *Commodity Frontiers* 5: 28-33. doi: 10.26300/4dhm-cb67.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.

Human Metabolism as a Sugar Frontier

Ulbe Bosma

Keywords: sugar, commodity frontier, metabolism, capitalism

Abstract: Sugar has become a mainstay of contemporary diets. Sometimes visible in the form of sweets and heaping teaspoons of white powder dumped into coffee and tea, and sometimes invisible in processed foodstuffs and beverages, sugar is a part of daily life for many. More than a "natural" desire for sweets, the spread of sugar into more human bodies and at higher concentrations since the Industrial Revolution has been the result of concerted efforts. Industrialists capitalized on sugar's energetic properties to increase proletariat working hours and productivity. Military commanders in the World Wars similarly enlisted sugar to boost soldiers' endurance. And both the food and beverage industry and sugar manufacturers have worked in concert to get sugar into more and more products and more and more bellies around the world. As a result, we are hooked on sugar, a craving crafted through decades of (over-)exposure to the sweet stuff. A look into the history of sugar uses and its bodily impacts reveals human metabolism as a capitalist frontier.

From the earliest days when people learned to boil sweet cane from juice into a solid mass, sugar was praised for its capacity to recuperate the exhausted human body. A thousand years ago, sugar was embraced for its medicinal potency in pharmacopeias all over Eurasia. While rather innocent and benign at the start, early engagements with sugar were the very beginning of an unrelenting march of sugar that eventually changed human consumption patterns profoundly, taking our metabolisms hostage. The human body has functioned as a sugar frontier and, as happened at many commodity frontiers in the world, with ravaging effects. Once a medicine and delicacy, sugar has now become a prime health threat. This conquest of the human body, indeed, has resulted in today's obesity pandemic and a range of related human health problems.

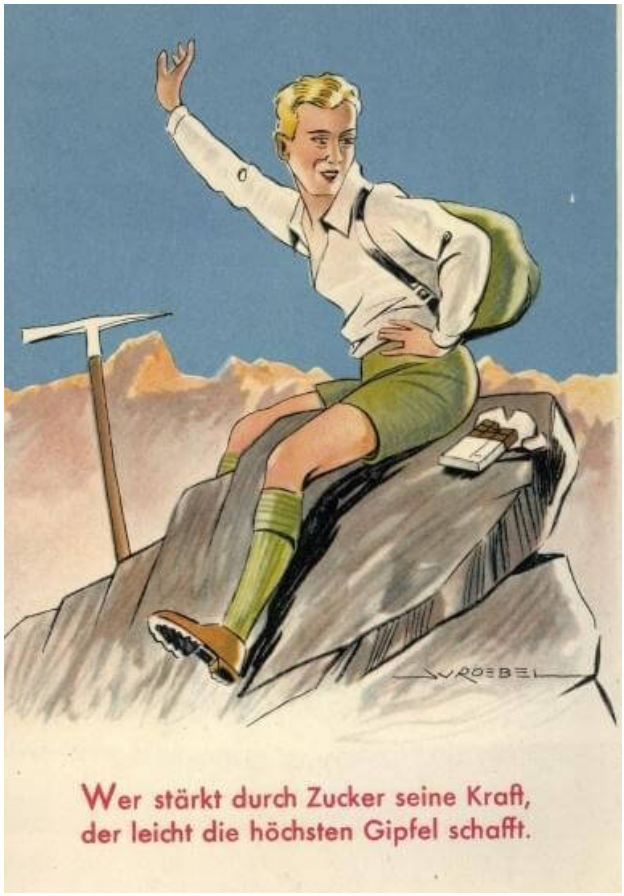
The question is: how could this happen?

Rather than a "natural" human craving for sweetness—at first sight a rather plausible explanation—sugar's conquest of the human body is like any other commodity frontier driven by capitalist expansion. It actually took time and effort to accustom people to excessive sugar consumption. With the exception of England, the Dutch Republic, and India, sugar was not consumed in substantial quantities in the 18th and 19th centuries. It was only in the wake of the Industrial Revolution—and the continuing enslavement of African bodies in the Caribbean and the US South—that sugar was mass-produced and turned into a cheap commodity. Only by the late nineteenth century, the proletarian body, and the urban one in particular, became a crucial sugar frontier. At that time, moreover, undernutrition seemed to be a serious health threat and a highly efficient and well-organized beet sugar industry disgorged massive amounts of cheap calories to keep the proletariats of Europe and the United States at work. Not that sugar was that popular among working-class people; it was sometimes even resented, particularly in the countryside, where sweet food was perceived by sturdy farm hands as effeminate.

But sugar industrialists found ways to get people used to a much sweeter consumption pattern. They discovered that a highly efficient way to funnel its excess production into society was via the soldiers' bodies. The proletariats who were sent to national frontlines and to colonial wars usually suffered from exhaustion and intestinal diseases. Sugar, and sugar water in particular, helped to keep people suffering from serious diarrhea alive. Moreover, refined sugar was one of the few food items that did not perish under hot and humid conditions. Sugar became as important as guns and ammunition for military success.

Military commanders took a methodical approach to sugar. In the late nineteenth century, the German army started testing the impact of sugar on the endurance of soldiers, with expectedly positive results. German, French, and American armies–and later on, the Japanese army–all rapidly increased the amount of sugar in soldiers' rations. Sugar was added to coffee in the garrisons, and it was squeezed into soldiers' overloaded backpacks in the shape of sweetened cakes, candies, chocolate bars, and sweetened beverages. During the First World War, German trenches were lavishly supplied with sugar, also because healthier food became increasingly scarce. Following their sugar-fueled military service, veterans were now, and for the rest of their lives, accustomed to elevated sugar intake.

Once the martial qualities of sugar were proven, it entered the field of sports. Long before heavily sugared "sport" or "energy" drinks made their appearance, sugar started making its way into athletes' bodies precisely at the time when beet sugar producers were looking for ways to get rid of their sugar stocks. In 1902, the same year that the Brussels Convention reined in the severe overproduction and dumping practices by European beet sugar factories, a new front was opened up to capture the human body. Alfred Steinitzer published "Die Bedeutung des Zuckers als Kraftstoff für Touristik, Sport und Militärdienst" ("The Importance of Sugar as Fuel for Tourism, Sports, and Military Service"). The publication was sponsored by the German sugar industry, which also printed



Roebel Postcard (Germany), with man on top of a mountain with a chocolate bar. Translation: "Who enhances his [sic] strength through sugar, will easily climb the highest mountain top."

all kinds of material to be used by grocers including posters, postcards, and paper bags with the slogan "Sugar Gives Energy".

Advertising the energetic qualities of sugar seemed to make sense at a time when a huge section of the population was lacking bodily strength. Within the medical profession, it was commonly held that working-class people suffered from a lack of necessary calories. This calorie-based understanding of nutrition and hunger also became the primary focus of nutritional sciences. This was definitely true for the American pioneering nutritionist, Wilbur Olin Atwater, who began his career working on fertilizers and subsequently turned his gaze to human metabolism in the 1890s. Although Atwater promoted a balanced diet of calories and proteins, his objective, and that of his employer, the American Department of

Agriculture, was basically to find ways to feed people adequately at minimal cost. Calories ranked high in this endeavor, and sugar was a cheap and extremely efficient calorie provider. It is true that obesity was not an issue among working-class people at the turn of the twentieth century, but calories gained an overdue prominence in nutritional science. This was also because notions of healthy food were still wanting, vitamins were only "discovered" in 1912, and proteins, although known, only gained more importance in discussions about human diets after the First World War. Thus early nutritional science created a new capitalist calorie frontier focusing on human metabolism.

The household was another avenue for sugar to conquer the human body. In the nineteenth century, urban working-class women had to work long days in factories and were also responsible for feeding their families at home. With such little time (and energy) to cook, marmalade and cheap sugared foods became increasingly part of their households' daily menu. This was only the beginning of the explosive growth of prefabricated food. At a time when in many urban environments food was often adulterated, of poor quality, musty, and sometimes even poisonous, packaged food could be sold as safe and therefore healthier than fresh food obtained at the market. Sugar, meanwhile, became cheaper and cheaper, and thus increasingly attractive for the food industry to add to its products.

The sweet stuff became an invisible, albeit intrusive part of the middle-class ideal to create a hygienic and safe lifestyle. Over the years a range of products with loads of sugar, ranging from baking powder to instant desserts, entered American and later European households. And although at the turn of the twentieth century, when the new ideal of the middle-class responsible housewife emerged, recipe books warned against excessive sugar consumption, even designating sugar as an adipose matter, there was no way to stop its proliferation in prefabricated food. Sugar gave texture and taste, and helped to preserve food.

In addition to soldiers and housewives, children were also targeted. In the nineteenth century, kids in London or major American cities already consumed incredible amounts of candies. Doctors and teachers complained that children came to school without breakfast but with enough candies to ruin their teeth for the rest of their lives. Candies became abundantly available and, almost unbelievably today, were considered to be food, for the mere fact that they contained calories. Things went from bad to worse with the introduction of sweetened beverages in the late nineteenth century. Whereas fresh food usually contains fibers, which fill you up, drinks do not contain fibers and can be swallowed in large quantities without satisfying your hunger. Moreover, beverages lend themselves ideally to be associated with an outgoing life, with sociability, even with sports. Not considered to be food but refreshment, they are less scrutinized for their nutritional value than the things we find on our dinner tables. Exactly this lack of consideration turned beverages into such an immense health threat, surrounding us almost everywhere, even in vending machines at schools.

The medical profession over the last 100 years has fought an uphill battle to protect populations against sugar flooding into our lives, but as we must conclude from today's obesity pandemic, doctors and nutritionists have been on the losing side. The food and beverage industry and sugar manufactures, on the other hand, are on the winning side. They forged a powerful coalition that continues, although cracks have become visible over time as they occupy different sectors of the sugar chain; the food and beverage industry wants to have their sweet stuff at the lowest price possible, after all.

Cheap food turns the wheels of capitalism and this in the end became a threat to sugar itself. From the 1980s onwards, High Fructose Corn Syrup made its spectacular appearance, rapidly replacing beet and cane sugar in beverages. Particularly in the United States, it raised daily caloric intake, further distorting human metabolism.

The World Health Organization is ringing the alarm bell, warning that a worldwide obesity pandemic of serious proportions is unfolding in full daylight. But in contrast to their more or less adequate response to the COVID pandemic, governments are not usually up in arms to protect their citizens from this long-looming threat. Seeing a market in people who want to stay slim, the food industry itself, and the beverage industry in particular, took some steps to introduce artificial or natural non-caloric sweeteners, which may help to avert the worst in terms of obesity, but brings other health-related concerns. Nonetheless, our taste has become so accustomed to sweetness that even with a proliferation of non-caloric sweeteners we will still continue to consume too much sugar. Neither will these sweeteners change the alarming fact that our own metabolisms have become a capitalist frontier.

Ulbe Bosma is Senior Researcher at the International Institute of Social History (IISH) and Professor of International Comparative Social History at the Free University of Amsterdam. He is one of the leaders of the Commodity Frontier Initiative and author of *The World of Sugar: How the Sweet Stuff Transformed Our Politics, Health, and Environment over 2,000 Years* (2023, Harvard University Press).

*All photos provided by the author.

Correspondence:
Ulbe Bosma, ubo@iisg.nl.

Cite this article:
Bosma, U. (2023). "Human Metabolism as a Sugar Frontier." *Commodity Frontiers* 5: 34-37. doi: 10.26300/gheq-yx62.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.

Expendable Lives, Valuable Bodies: The Secret Journey of Ebola's Blood

Veronica Gomez-Temesio

Keywords: Ebola, clinical trials, body commodification, colonial medicine, race, blood

Abstract: During the 2014-2015 Ebola outbreak that affected the Mano River region, humanitarian response teams were sent to West Africa to help the affected countries to break contamination chains. In the quarantine units, people sick with Ebola were treated as already dead. The politics of life at play during the outbreak sheds light on the way African citizens are historically treated in their encounters with the West as having no political value: Bodies merely disposable. Nevertheless, other dynamics of value exchange were at play. In this article, I explore the issue of bodily fluids commodification through the routine of blood sampling in isolation quarters. The article focuses on how Black bodies were perceived as radically inferior to white bodies. Black bodies were exploited by colonial medicine as well as the contemporary clinical trial industry because they were known to be similar to white bodies. In this tension between radical difference and absolute similarity emerges the value of the Black bodies as "guinea pigs." Because it is treated as deserving less care than a white/Western body, the Black body eventually produces more value. While the medical research industry uses the semantic of the gift to address the involvement of humans in the testing of new drugs, this piece argues that the exchange between this industry and those whose bodies enable new drugs to be marketable is rather unequal. These people give access to their bodies, yet they are never allowed the Maussian payback.

There are not a lot of people that are out there that want to put experimental medication in their body for the hell of it.

- Comment from *a* source to Roberto Abadie during his fieldwork on professional "guinea pigs" in Philadelphia (Abadie, 2010).

Prologue: Where Did the Samples Go?

At the end of 2013, an outbreak of Ebola started in the Forest region of Guinea. Within a few weeks, the epidemic extended to the whole Mano River region with cases being reported in state capitals: Conakry, Freetown, and Monrovia. Later in 2014, the World Health Organization (WHO) eventually declared the outbreak an international emergency. International response teams as well as financial resources were sent to West Africa with the imperative of breaking down contamination chains. While the virus eventually stopped spreading in 2015, it continued traveling, though less visibly, through the infrastructure of medical research industries. Indeed, in 2019, an investigation led by Emmanuel Freudenthal and Chloé Hecketsweiler and published by *Le Monde* revealed that contaminated blood samples and biological material from Guinea, Sierra Leone, and Liberia had been taken out of

these countries without respecting either ethics or legal frameworks.

These samples are dangerous, yet incredibly precious. In the years to come, they will allow scientists to learn more about Ebola and to create new vaccines and treatments.

The medical research industry uses the semantic of "the gift" to characterize the involvement of humans in testing new drugs or giving access to their bodily fluids, such as blood or cells. People giving blood are presented as "giving" something belonging to them that will improve the lives of others. This rhetoric, however, obscures the way Western clinical trials largely involve working poor people seeking additional revenue to survive, or uninsured people who can only access treatment by being a "guinea pig[1]" (Abadie 2010).

The rhetoric also obscures how clinical trials are increasingly taken to the Global South, where unequal circuits of capitalist exchange have created the perfect conditions for their operation: medical care is lacking, or, at best, scarce. When people "give" their fluids, their cells, their time during clinical trials, they are never granted the payback theorized by Mauss a century ago. In his vision, to give is to be part of an exchange where you receive something similarly valuable in return. Yet, this piece highlights that there is no real payback in the research medical industry: only disposable bodies and their consequent exploitation. Hadja and Fofana (fictitious names) were both quarantined in Wonkifong isolation unit in

Wonkifong Ebola Treatment and Quarantine Unit, 2015, Guinea. Photo: Veronica Gomez-Temesio.

[1] The term "guinea pig" (French: *cobaye*) is commonly used in medical research and literature to describe people who are brought into trials as test subjects. I use the term with quotation marks to emphasize its dehumanizing character.

Guinea where I conducted fieldwork during the outbreak in 2015[2]. In the unit, blood sampling was a common routine. Blood was taken from Hadja three times while she was quarantined: once for diagnosis when she arrived, the second and third times when she became asymptomatic to monitor whether the virus was still in her blood. Fofana's blood was collected four times. He became asymptomatic after being quarantined for two weeks. Still, the PCR continued showing traces of the virus before he was allowed to leave quarantine.

All of these samples were stored in the European research lab that was built within the unit. At the end of the outbreak, the unit was completely dismantled. Indeed in 2018, when I visited the place again, only the concrete slab remained. I asked a former worker about this dismantlement. He explained that the government took back what might be valuable: the tarpaulins, the tanks, the incinerators. People from the neighboring village picked up some small items such as studs. But about the blood samples, he had no information.

What happened to these samples when the epidemic was over? If, as noted by Freundenthal and Hecketsweiler, a "nebulous blood diplomacy" took place between the affected countries and global key players bringing aid relief such as the United States, France, or Russia, the samples' disappearance sheds light on a trend that has affected unequal encounters between the West and Africa since even before colonial times.

The ruins of the unit, three years after the outbreak, 2018. Photo: Veronica Gomez-Temesio.

[2] I conducted fieldwork in the Wonkifong quarantine unit from February to June 2015. I then completed my work in September 2015 shortly before the unit closed.

Writing on how Black bodies were exploited in plantation hospitals, Owens suggests the concept of a "medical superbody" (2017) in addressing how, while white doctors dismissed female Black bodies as completely other, they still exploited them as "guinea pigs" in medical experiments because they thought they could endure more pain than white bodies – depicted as more fragile and vulnerable. During the outbreak, the same dynamics were at play. In the quarantine units, African citizens were treated as politically less worthy while their bodies and their material components were afforded tremendous value.

Radically Different, but Completely Similar: The Disposability of Black Bodies and the Commodification of their Fluids

My first encounter with Ebola happened in Wonkifong, a village 40 km from Conakry, when I started fieldwork in a quarantine unit in 2015. As for many people who had never been in contact with the virus, hemorrhagic fevers, and Ebola in particular, enacted for me a dreadful imagination where people bleed to death. And indeed, during my first time in the quarantine quarters zone, I noticed a young woman on the floor in a pool of blood. She tried to grab my legs and begged me to help her. The doctor I was following told me to move on. We were dressed in full protective equipment at that time, but even then, blood was both feared and avoided. The doctor explained that a team of paramedics had to be sent to clean the patient with chlorinated water before it was safe for any healthcare member to touch or even interact with her. The woman was left in her agony.

Following this ethnographic encounter, I quickly noticed that if the unit was an exceptional site of biomedical and biosecurity technology, the concrete procedures to contain the virus reduced patients to dangerous bodies (Gomez-Temesio 2018, 2020a, 2022; Gomez-Temesio and Le Marcis 2021, 2017). Regularly, sick people fell from their beds, soiled themselves, and agonized for hours without medical intervention. At the same time, recovering patients had to share their space for hours with dying patients or even corpses.

The Ebola outbreak was the epicenter of one of the most important humanitarian interventions of the early 21st century. Humanitarianism, warns Fassin, sheds light on the inequality of life in the contemporary world. Following this, he proposes the concept of *politics of life* to address how different values are given to different types of lives within the humanitarian project (2007). While Western saviors are recognized and treated as political lives, the victims of catastrophes– those who benefit from humanitarian aid – are equated with biological lives. They may be sacrificed for the greater good. In this way, the concept of a politics of life builds on the theory of political recognition – with a division between two types of humanity – as explored by Arendt ([1958]1998). To the bios of those recognized as fully human, she opposes the zoë of the enslaved who are only recognized for the labor of their bodies but deprived of all the features – the privileges – of being a plain human: a political existence. Humanitarianism hence reveals two types of humans inhabiting our contemporary world. Those who matter and those who don't (Gomez-Temesio 2020b).

References on the value of life in humanitarian emergencies portray biological life as having no value at all. A "bare life" that is merely disposable (Agamben 1998). Yet, social death is frequently equated with economic value (Gomez-Temesio 2018) through an entanglement between risk, race, and exploitation. Indeed, the body frequently emerges as a site of production, where living persons may be valued solely for their labor power (Sharp 2000). Hence, since colonial times, the unequal exchanges between Africa and the West are marked by enduring dynamics of body commodification (Michel 2020). In the colonies, African bodies were exploited as a labor force (Pereitti-Courtis 2021). The colony subjects also participated as "guinea pigs," giving blood as well as other biological material. The colony, therefore, transformed itself into a life-size laboratory (Eckart 2002; Lachenal 2017).

Dressing for the quarantine quarters, 2015. Photo: Veronica Gomez-Temesio.

The exploitation of Africans as "guinea pigs" underscores an ambivalence in how the colonial gaze perceived Black bodies. Through "race science," Black people were described as physically and cognitively inferior to white people. Yet, medical practitioners knew Black anatomy to be identical to white people. Black people were hence pictured in medical manuals as radically different, while exploited as "guinea pigs" because they were known to share the same anatomy as white people.

Regarding colonial medicine and medical trials, Black people were defined at the same time as radically different and perfectly similar. For the new Institute Pasteur scientists, French colonial territories in Africa allowed a golden age where experimentation could be conducted without the material and ethical constraints that would be experienced in Europe (Lachenal 2017). The early stages of epidemiology in colonial Africa mirror the birth of American gynecology in antebellum America, where enslaved women's bodies were exploited by doctors to try new surgical procedures. Plantations hospitals, therefore, became a hub of gynecological and obstetrics surgery trials. First, they were used to maintain the local population of enslaved people after slave importation was banished. Second, they were used to test new procedures without having to contend with the constraints placed on the bodies of white/free women. Once stabilized, these surgical procedures made American gynecology and obstetrics a leading international field (Owens 2017), though they only benefitted white society. In the colony as in the plantation, Black bodies with their organs, blood, body parts, and tissues were

treated as resources in the same way as land or rivers. They increased the capital of the colony or the plantation.

Today, life-sciences industries still depend on an extensive, yet unacknowledged, labor force (Cooper and Walby 2014). In the US, while experimentation has been historically conducted on captive populations, "guinea pigs" are now hired from the lower strata of society, notably the poor and the uninsured, as noted by Abadie, (2010: 122). Clinical trials enrolling subjects at the margins of society is a trend that is extending to the Global South, with clinical trials increasingly outsourced to private companies in Asia or Latin America. The same entanglement between political recognition, biological availability, and anatomical similarity has been at play since colonial times. People at the margins who might be perceived as too poor or racially different are put at risk. Their lives are not worth caring for because they are perceived as belonging to a different kind of humanity. Still, their bodies and their material components are valued because of the universality of human anatomy. The Ebola crisis, therefore, mirrors both the current development of life industries in the West and the "haunting" legacy of colonial medicine (Chabrol 2018, Gordon 2008).

In their investigation for *Le Monde*, Freudenthal and Hecketsweiler recounted that, relying on WHO's numbers, 269,000 blood sampling procedures were performed during the outbreak, and among them, 24,000 samples were positive for Ebola. These samples were analyzed largely by foreign teams coming from Europe, Canada, China, and Russia as was the case in Wonkifong, where a European

The incinerators within the unit. All contaminated material was daily buried by Guinean paramedics, 2015. Photo: Veronica Gomez-Temesio.

international lab was built within the unit. If blood was taken for diagnosis, all traces of that sample were quickly lost at the end of the epidemic. At Wonkifong, blood sampling was a common yet exceptional routine. While medical care was the task of international teams, cleaning patients and extracting blood was outsourced to local staff. Even within the humanitarian force, Black lives were put at risk more frequently than those of the foreign staff (Gomez-Temesio 2022).

Blood contained something deadly, yet valuable in terms of medical research and for the pharmaceutical industry. Until 2014, the virus only caused very concealed epidemics; hence, it was still understudied even though it had long been considered a potential biological weapon. Infected blood was hence highly valuable in terms of learning about the virus, as well as for potential vaccine production. How did such a precious material get so easily out of hand?

According to a source quoted by the investigators of *Le Monde*, Guinea was a "colander" at the time of the outbreak; medical teams landed and took off without control. In addition, the affected countries were not in a position to say no to Western appetites, as they were completely dependent on aid relief. As a consequence, the project of implementing a common biobank initiated by the WHO was abandoned. As I recounted in other work, humanitarian quarantine camps were not made to cure Guinean citizens of Ebola (Gomez-Temesio 2018, 2020b). They were made to quarantine a deadly virus and make the Global North a safe place again. But breaking contamination chains was not the only issue at stake. The virus had to stay in Africa, but at the same time, the virus was expected to travel to the West—not through human contamination. In samples.

Fofana and Hadja: Blood Sampling Without Medical Care

Every time Fofana and Hadja had blood taken, they were told that it was for diagnostic purposes only. They were never notified that their blood could be taken out of the country and exploited for medical research. Nevertheless, since 1964, the Helsinki protocol has regulated research on human subjects (Abadie 2010). For medical research to be conducted, even on a blood sample, the owner must give consent. Still, Cooper and Walby note that human research subjects currently appear "as an already available biological resource, as res nullius, matter in the public domain" (2014). The infected blood sheds light on the enduring dynamics of body commodification, where, as noted by Sharp, the pauper, the people at the margins, end up having more value dead than alive (Sharp 2000). Following this, politically expendable categories of persons are transformed into valued objects through their involvement in medical research. If Black bodies are treated as politically disposable, their bodies, tissues, and blood are perceived as completely equivalent to Western blood and, therefore, are commodified. This material is used to deepen medical knowledge, create new drugs, and eventually benefit people in the West, whether they are common citizens accessing new medical technologies such as vaccines or Big Pharma shareholders. Because it deserves less care than a white/western body, the Black body eventually produces more value.

Fofana and Hadja eventually survived the virus. But the outbreak stole their economic and social networks. Fofana was taken to Wonkifong after several mysterious deaths at his home. When he was released from the quarantine unit, under pressure from their neighbors, his siblings expelled him from his home. They were afraid he could still contaminate them. He had to make a living, struggling with acquaintances in Conakry.

When the outbreak started, Hadja was living in Kankan, a city at about 630 km from Conakry, with her husband and children. She came to the capital to attend the funeral of her mother after her unexpected death. She was contaminated there. When she was released, Hadja took refuge in an aunt's house in Conakry because her husband refused to allow her to come home. His second wife opposed it. She also feared Hadja was still contagious. Hadja and

Fofana also suffered from subsequent physical and mental symptoms and impacts but had no means of receiving medical care (James et al. 2019; Wilson et al. 2018). Fofana suffered from pain in his eyes and kidneys. He felt depressed and suffered from insomnia. Hadja suffered from amenorrhea and was afraid she may not be able to conceive anymore. Surviving the virus, therefore, did not mean successfully overcoming it. Ebola not only disrupted the body: it deeply affected the social and political lives of those who crossed its path.

A few weeks after their release from the unit, both were approached by a doctor conducting an internationally-based clinical trial on Ebola survivors. The trial offered monthly medical care in exchange for blood, semen, vaginal secretions, teardrops, as well as other medical exams. Both initially agreed. As both were unemployed and uninsured, it was a way to gain medical care. Fofana entered the clinical trial, but Hadja wasn't granted enrollment. At that time, her husband had finally agreed to allow her to come home. The trial offered initially to pay for monthly public transportation so that attending medical exams would not be a burden. But one of the doctors in charge of the clinical trial said Kankan was too far away and, hence, too expensive. The round-trip cost around 45 EUR at the time. The doctor asked her to stay in Conakry. Hadja badly wanted access to medical care. She wanted the chance to see an ob-gyn. Still, her children were with her husband. She hadn't seen them in months. She decided to go back.

Following Fofana and Hadja's journey, enrollment in clinical trials after the outbreak sheds light on how, in the Global South, people increasingly experience proxy terrains of health access where medical attention is only granted sporadically (Petryna 2013: s68). During the COVID-19 pandemic, new vaccine technologies were highlighted in the news as demonstrating the success of medical research over death and diseases. While there is no point in arguing that vaccines did help stop the pandemic, these success stories should be addressed with caution. What lies beneath all the improvements made to our lives thanks to research and pharmaceutical industries is the disposability of the bodies of those who reside at the margins of the global world.

As Abadie warns us, placing the burden of safety testing on healthy "guinea pigs[3]" belonging to the lower strata of society contravenes the Declaration of Helsinki, which states that medical research is ethically justified only if there is a reasonable chance that the population in which it is conducted will benefit from the results (2010:154- 55). Those who are exploited as "guinea pigs," whether they explicitly consent to do so for money or in exchange for healthcare, or they remain ignorant of their participation as in the Ebola crisis, are among the margins of the global world. As noted by Fischer, the clinical testing of new drugs is therefore conducted on uninsured individuals who then lose access to those treatments when they are made available on the market (Fisher 2008).

Epilogue: The Industry of the Gift?

References to the commodification of the body are usually avoided by medical research teams and the pharmaceutical industry by using the rhetoric of the gift (Sharp 2000). The Ebola outbreak and the clinical trials that took place in Guinea during that time made no exception. During the last months of the outbreak, a new vaccine was tried on healthy people in the country. Successful results were announced by the WHO in 2015. Dr. Sakoba Keita, the State officer in charge of the national coordination against the epidemic, declared that the trial and its results constituted a gift from "Guinea to

[3] Usually Phase I of clinical trials is the first to involve humans. Phase I tests the safety, toxicity and side-effects of the new drug. For that reason it usually involves healthy test subjects (see Abadie 2010). Phase II and III looks at the efficacy of the drug and for that reason involves people suffering from the affection the new drug is supposed to address.

West Africa, a gift to the World[4]." This semantic turn, as noted by Abadie, masks the pain, risk, and suffering of those who enrolled in trials as well as the unequal exchange at the core of the clinical trial industry.

The gift was theorized by Marcel Mauss and constituted for a long time a fundamental concept of economic anthropology (Mauss 1923). To give is in Mauss's paradigm an obligation that is accompanied by two other obligations: to accept the gift and then, to give back. Therefore, when the clinical trial industry is akin to exploiting the semantics of the gift, one must ask, where is the payback?

In 2018, I met Fofana again in Conakry, three years after the outbreak. The trial had stopped. After he gave multiple samples of what his body could produce, he was left without medical care. Some days, he couldn't go outside without sunglasses. His eyes made him suffer. He tried to rent himself at the market to do small errands. But his back hurt a lot. He gave blood samples without consent in the unit. He gave samples to a clinical trial while consenting to it. Since the outbreak and thanks to the medical knowledge gathered about Ebola, the scientific and medical community knows more about the virus and its long-lasting consequences. We have learned about transmission and hopefully, new vaccines are on their way.

Still, Hadja, Fofana, and all Ebola survivors left without medical care since 2015 are waiting for their Maussian payback.

References

Abadie, R. (2010). *The Professional Guinea Pig: Big Pharma and the Risky World of Human Subjects*. Durham and London: Duke University Press.

Agamben, G. (1998). *Home Sacer: Sovereign Power and Bare Life*. Stanford, CA: Stanford University Press.

Arendt, H. ([1958] 2013). *The Human Condition*. Chicago: University of Chicago press.

Chabrol, F. (2018). "Viral Hepatitis and a Hospital Infrastructure in Ruins in Cameroon." *Medical Anthropology*, 37(8), 645-658.

Cooper, M. and Waldby, C. (2014). *Clinical Labor. Tissue Donor and Research Subjects in the Global Bioeconomy*. Durham and London: Duke University Press.

Eckart, W. U. (2002). "The Colony as Laboratory: German Sleeping Sickness Campaigns in German East Africa and in Togo, 1900-1914." *History and Philosophy of the Life Sciences*, 22-23(II), 69-89.

Fassin, D. (2007). « Humanitarianism as a Politics of Life. » *Public Culture*, 19(3), 499-520.

Fisher, J.A. (2008) *Medical Research for Hire: The Political Economy of Pharmaceutical Clinical Trials*. New Brunswick: Rutgers University Press.

Freudenthal, E, and Hecketsweiler, C. (2019) « Où sont les échantillons sanguins infectés par Ebola ?» Le Monde, édition du 22 janvier édition 2019.

https://www.lemonde.fr/afrique/article/2019/01/22/ebola-l-utilisation-opaque-des-echantillons-sanguins_5412571_3212.html?fbclid=IwAR0VaXbkKf3Csr0oaPa8AievfzaPsFHUTE3mUWL3kKqRr_d-hlhstWlhzUk

Gomez-Temesio, V. (2022). « Homage to Ebola Fighters: Black Labor and Humanitarian Media Campaigns. » *Medical Anthropology Quarterly*, 36(3), 329-349.

Gomez-Temesio, V. (2020a). « Aux confins de la quarantaine: les zombies de notre monde. » *Anthropologie & Santé*. (21).

Gomez-Temesio, V. (2020b). Lives that Matter and Others that Don't: Thoughts from Europe about this New Pandemic. en ligne], www. americananthropologist. org/2020/07/02/lives-that-matter-and-others-that-dont-thoughts-from-europe-about-this-new-pandemic/

Gomez-Temesio, V. Gomez-Temesio, V. (2018). Outliving Death: Ebola, Zombies, and the Politics of Saving Lives. *American Anthropologist*, 120(4), 738-751.

[4] https://www.who.int/fr/news/item/30-07-2015-world-on-the-verge-of-an-effective-ebola-vaccine.

Gomez-Temesio, V., & Le Marcis, F. (2021). « Governing Lives in the Times of Global Health. » in *The SAGE Handbook of Cultural Anthropology* 1, edited by L. Pedersen and L.
Cliggett, 554–78. London: Sage.
Gomez-Temesio, V., & Le Marcis, F. (2017). La mise en camp de la Guinée: Ebola et l'expérience postcoloniale. *L'Homme*, 222, 57-90.
Gordon, A. F. (2008). *Ghostly matters: Haunting and the Sociological Imagination*. Minneapolis and London: University of Minnesota Press.
James, P. B., Wardle, J., Steel, A., et al. (2019). "Post-Ebola Psychosocial Experiences and Coping Mechanisms among Ebola Survivors: a Systematic Review. » *Tropical Medicine & International Health*, 24(6), 671-691.
Lachenal, G. (2017). *Le médecin qui voulut être roi. Sur les traces d'une utopie coloniale*. Paris: Editions du Seuil.
Mauss, M. (1923). « Essai sur le don forme et raison de l'échange dans les sociétés archaïques. » *L'Année sociologique* (1896/1897-1924/1925), 1, 30-186.
Michel, A. (2020). *Un monde en nègre et blanc. Enquête historique sur l'ordre racial*. Paris :Editions du Seuil.
Owens, D. C. (2017). *Medical bondage: Race, Gender, and the Origins of American Gynecology*. Athens : University of Georgia Press.
Peiretti-Courtis, D. (2021). *Corps noirs et médecins blancs: la fabrique du préjugé racial, XIXe-XXe siècles*. Paris : La Découverte.
Petryna, A. (2013). "The Right of Recovery." *Current Anthropology*, S67-S76.
Sharp, L. A. (2000). « The Commodification of the Body and its Parts. » *Annual Review of Anthropology*, 29(1) : 287-328.
Wilson, H. W., Amo-Addae, M., Kenu, E., Ilesanmi, O. S., Ameme, D. K., & Sackey, S. O. (2018). « Post-Ebola Syndrome among Ebola Virus Disease Survivors in Montserrado County, Liberia 2016. » *BioMed research international*.

Acknowledgment: The author would like to thank Mattias Borg Rasmussen and the editors of *Commodity Frontiers* for insightful comments. This piece was written thanks to funding received from the Swiss National Science Foundation, Ambizione grantPZ00P1_193339 *Triage and Neglected Spaces of Care: Diabetes in Guinea.*

Veronica Gomez-Temesio is a political and medical anthropologist. She is currently a senior researcher at the Global Studies Institute, University of Geneva, Switzerland. Her recent work focuses on Ebola epidemics as spaces of postcolonial endurances.

*All photos provided by the author.

Correspondence:
Veronica Gomez-Temesio, veronica.GomezTemesio@unige.ch.

Cite this article:
Gomez-Temesio, V. (2023). "Expendable Lives, Valuable Bodies: The Secret Journey of Ebola's Blood." *Commodity Frontiers* 5: 38-47. doi: 10.26300/19y1-5e05.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.

Before I Forget: Learning To Live With A Dynamic Memory System
A Conversation with André Fenton

Maarten Vanden Eynde

Keywords: neuroscience, memory, remembering, forgetting, external memory devices, theory of mind, DNA, RNA, epigenetic, trans-generational trauma, dynamic system

Abstract: With the increasing availability of memory devices that supplement or in many cases surpass our biological memory, the question of where the body ends and the rest of the world begins becomes impossible to answer. With current AI technology able to retrieve text from brain scans of thinking (or transmitting?) people, are we slowly becoming part of a massive mind of many, rather than a collection of individual brains full of interacting neurons? And what concepts or language will we use to describe memory features in this transhumanist future? This article is an edited transcript of a conversation between *Commodity Frontiers* editor, Maarten Vanden Eynde, and neuroscientist, André Fenton, in April 2023.

Maarten Vanden Eynde (MVE): Let's start with two simple but related questions, focusing on our own body first, before zooming out: where is memory located in the human body? And how does it get stored?

André Fenton (AF): We have to be careful in order to answer that by defining memory. And there are many different ways to define memory, because we don't actually know what it is. From the most basic point of view, the most fundamental concept of memory is information storage, and that information usually comes from lived experiences. We wouldn't think of memory as something in the genetic code that is passed from one generation to another, or from one species to another, but that's certainly also information storage. It usually comes from an individual's lived experience, and information that is stored from that experience. People recognize memory because it changes what one does in the future. It has this ability to cause, whether for better or worse, changed behavior. That is the common way of thinking of memory.

Information storage must happen, at least in a biological way, somewhere in the body. We mostly think that information storage is guided by things like neurons, the primary type of electrical cell in a brain or central nervous system. Those neurons extend to the gut, they extend to muscles, everywhere, but they are most concentrated in the brain. We have studied memory as information storage in the brain, but it is very clear, super clear, that that process is happening in lots of places other than the brain. Like the spinal cord, as part of the central nervous system, but very similar processes are free to occur as well at the neuromuscular junction where neurons from the spinal cord contact muscles. The system is able to learn and store information from experience in lots of places.

If we continue to think about memory as a process that is the consequence of experience and causes information storage, well, you know from lived experience, that you can store information outside of your body in a device like this [André Fenton is holding up a smartphone in front of a camera of a computer on the other side of the world].

We can store information in our bodies with so to speak "devices." A trivial example that we

probably don't think about too often is our gut bacteria. My experience, what food I eat, how stressed I am, how not stressed I am, all these kinds of things have a consequence in me trying different types of diets and affecting the different times of day that I eat. I'm affecting my behavior, which changes my gut biota, making it different today than it was last year when my behaviors were also different. This is a lasting consequence of my behavior, and now I have to live with it. I might not consciously access that behavior, but it's nonetheless information storage that I persist with.

To answer the question in that context: for the kind of memories that we consciously recall with a fair bit of ease, so-called "content addressable memory," the brain is very clearly the repository of such kinds of information. But memory as a process is distributed way beyond the brain and the interactions of the brain with other physical parts of the body that are not central nervous system organs, but are the interactions with those organs. It's not an intellectual leap to jump to an external storage device and it is relatively easy to see how we have a continuum of quantitatively different storage devices that are distributed on paper and books, in collective consciousness, and laws, and so on.

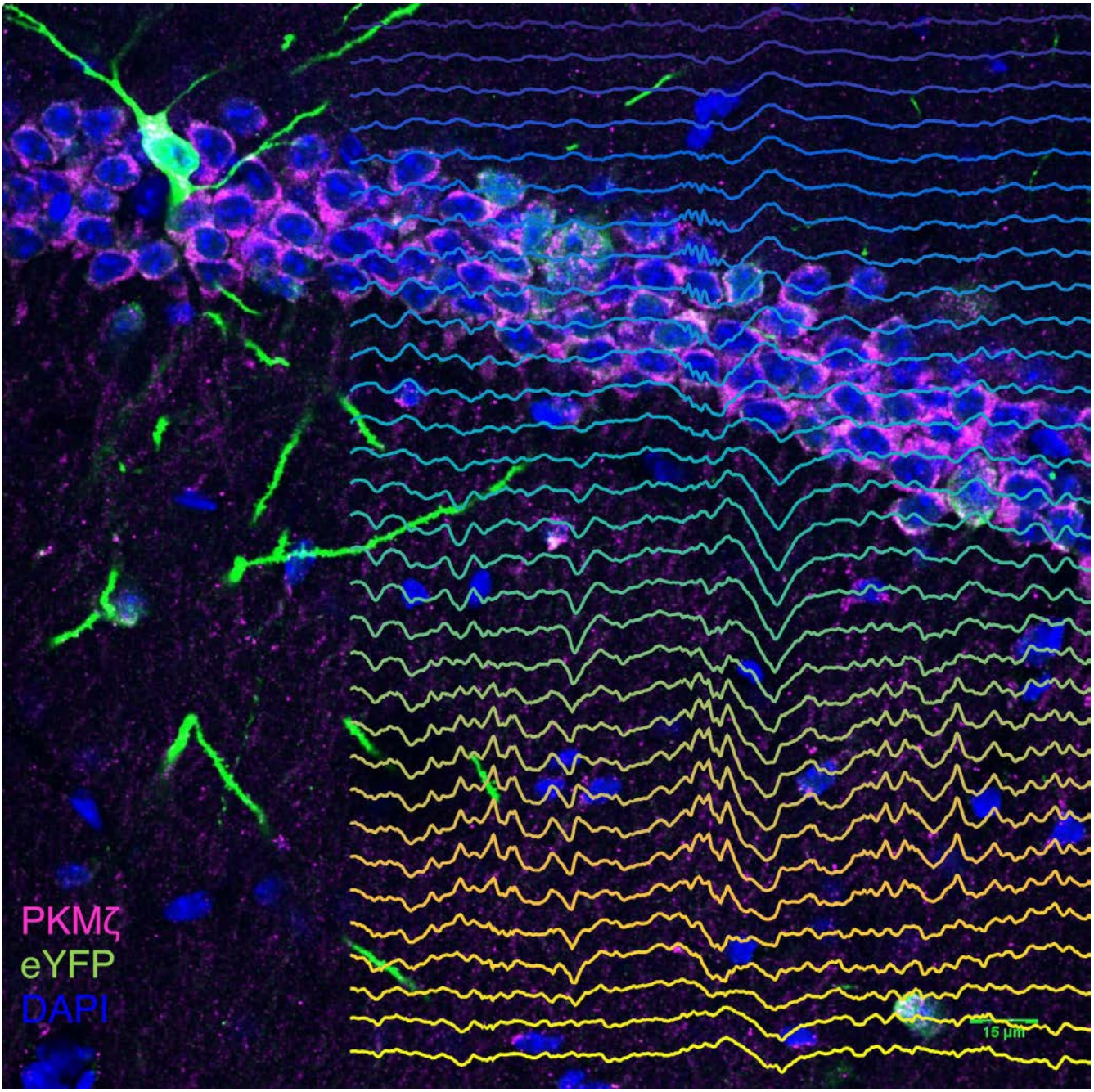
MVE: We will touch upon external memory devices or techniques a little bit later, but now that we looked at the *where*, let's briefly look at the *how*. How does this information storage happen? How does it become a retrievable memory? And how reliable is it?

AF: How memories are stored is again not known. There are two ways to think about memory and therefore memory storage, although it's the same process I will describe. What we believe—but are not certain about—is that to store information and memory, you have to make a physical change somehow, and that change has to be enduring. It is not easy to store information, for example in water molecules. Some may claim it can happen, but it is very hard to imagine because water molecules have a particular arrangement; they seem to move randomly, so it is hard to show that the water is different from one time to another.

Most memory storage mechanisms show an enduring change, and what's intriguing about the ways we think about memory storage in external devices, is that those changes are enduring for a long time. We make an electrical change or a magnetic change, or ink on paper, or a chiseled imprint on a piece of stone, whatever that is, and you can go and see reliably that it is still there. The paper may fade, the ink may fade or smudge, but there is evidence that there is difference and that those differences are enduring. So how does that happen in biology?

What is particularly curious in biology is that the elements that are changing are the elements that are *not* enduring, like proteins. Proteins are the output of using the genetic code in order to make something. The genetic code is mostly a set of instructions to make proteins. If you think about the process, the genetic code, the DNA [deoxyribonucleic acid] is a very stable molecule that endures. You can go and find dinosaur DNA in principle, but to turn DNA into protein is a very fragile process. You have to copy the DNA to make something called RNA [ribonucleic acid]. That RNA only lasts hours— not days but only hours—and those RNA have the instructions to make proteins, and the proteins last days, not years. So now you have a fundamental problem since most people's memories last decades, soon to be centuries. They are persisting for decades, but they are made from elements that only last days. How can you actually do something like that?

Think of the *Ship of Theseus paradox* where you, even though all of the elements are replaced over time, still have the same ship. The key is not to take apart the ship entirely at any one moment, but to replace each piece, little by little, and then you can have an enduring process as long as you accept that it is dynamic and all the parts are exchangeable. If they exchange at a fast rate compared to the half-life or durability of the object itself, you can have something perpetuate with fragile elements that will maintain. This is the job of chemistry. We know if you put two things together and they



"Structure of Cognition" Immunohistochemisty for the memory molecule PKMzeta in memory-expressing cells (EYFP) in a mouse dorsal hippocampal brain slice, with color-coded overlay of local field potential traces recorded from a 32-site electrode. (© Edith Lesburgueres and André Fenton)

happen to have an affinity for each other, then they will tend to accumulate together. If you put a bunch of people together who are randomly not associated to each other, they tend to congregate in social groups and because of that, you find that there are social groups that tend to endure and they don't even depend on the individuals. A university is a really good example, a nation, a neighborhood, so on.

These things don't persist in a pure form, they change slowly over time, while their individual elements are turning over much faster.

The way we think about memory storage is that you need a process like that, at least to the extent that we know. I mentioned from the outset that there is at least one other way to think about memory that's not so much in the

information that is stored—although that is the ordinary way we think about it—but we also know that in storing that information, we actually change. A good example of this is that I am a professor at a university, and what does the university do? It teaches you. You are supposed to learn at the university, but what are you really learning? Are you just learning information, are you just storing information? Hopefully not. Hopefully whatever you are learning is going to change your mind, change how you will behave in the future because of that learning. We call this an education.

This information storage is not being written down in something external—and that is the really interesting thing about biological memory —it is being written down in the same system that had the experience in the first place. That system is now irreversibly transformed to a new system, or at least a different system, that can experience the next opportunities of experience. From this point of view, the "how" of memory storage is very interesting because this persistent and enduring set of changes provides opportunities for tweaking, integrating, and adjusting what was stored. That has really important consequences because you are not merely a storage device; you are a self-organizing device that uses storage to process information.

MVE: Would it then be fair to say that when we both revisit or don't revisit a lived experience that the memory of it will always change? Because it has been processed constantly and the limited longevity of the original proteins that contain it are fading away so fast that we constantly need to produce new proteins that will remember it differently?

AF: Yes, it works like this, but let's not blame the proteins. It's not the protein's fault! The proteins and the proteins' process very interestingly have the chance to persist like the *Ship of Theseus*. But the fact that this turnover is perpetual provides an opportunity that your "external memory device" usually doesn't have. It's an opportunity to adjust what you have stored, for good or ill, but according to the current circumstances.

I find this very empowering, others find it disturbing, to recognize that I have the ability today to revisit my past and understand it and even remember it differently than I had experienced it. I have that ability, and that's because integral to my abilities to remember are my abilities to process information and to imagine my future and to understand my past, from my current vantage point. This isn't because of the protein, it's the opportunity that having a dynamically persistent mechanism offers you. It is very hard to do that when you have chiseled your mark onto a stone that doesn't have a dynamic life. It's very hard to adjust that, it's much easier to get a new stone and chisel something else.

MVE: I see, and maybe that connects to what I wanted to ask about when you previously said that memory comes about due to an experience that you have and not necessarily one that your parents or grandparents had. This kind of information is also stored genetically and even your distaste for some foods when it is stored in the gut biota. These genomes are inherited so you might revisit and relive certain experiences your parents or grandparents had?

AF: People are now studying trans-generational memory, trans-generational changes that happen, and the evidence is very clear that it happens. It happens through epigenetic changes, it can happen through "external memory devices" called bacteria that live in us, and so on. And remember, memory is a concept. None of us know what memory is. Plato contemplated memory, but Plato's ideas of memory are not my ideas of memory, and neither of us is wrong. These are concepts that have evolved as we learn about the world and ourselves and the mechanisms.

MVE: That is the same as the mind in that sense, to introduce the concept of mind. It's a very elusive concept that everyone is right about because nobody knows. When I started to read more and more about the brain and the mind and the difference between them, I was wondering whether there is something that exists outside of the human body that stores information—or experience if you want— and that does not disappear. I like very much the

idea that the mind is something we always offload information and experiences on, and that, as a culture, a community, or a group, we can carry it with us as we move forward, so that it is something that stays alive even when we die. During my lifetime I add to that larger mind, which is not just my own. I wanted to know what your ideas are about the difference between mind and brain and whether the mind is something external to the human body?

AF: These are very deep and unanswered questions, I think, so let's start with an analogy. If I describe to you a wave, we could talk of an ocean wave, a light wave, sound wave, it doesn't really matter. We can recognize that wave, but it is very hard to recognize the wave and describe the wave without having a medium for the wave. The wave is not the water, but you need water in order to have an ocean wave. The wave is not the air molecules, but you need the air molecules in order to have a sound wave. All that proves that we are very familiar with certain properties that emerge from other things, and those things are physical things of matter and energy. I can weigh a brain, I can tell you if it is fat or skinny, normal or abnormal in terms of its shape and parts and such. But that isn't mind. I believe we need a brain in order to observe mind, because mind is something that emerges from the operations of that brain.

Brains don't operate in isolation they operate with muscles, they operate as we now learn with biome, they operate between brains that are interpersonal operations. We are doing one now for instance. I am using my brain for that and your brain is changing because of that. The way you hold your posture is being registered through my vision and through my vision my brain is adjusting to that. We are changing each other and our brain activity as we do what we are currently doing.

So where does mind come in? It emerges from this in some way, so it is very difficult to separate, and given what we know today, it may be unwise to look for the distinctions between brain and mind and recognize that these are not interchangeable concepts but one must emerge from the properties of the other. Very likely the causal arrow is going in both directions.

One of the things I think is not commonly taught, but most physicists and certainly modern biologists are very comfortable with having, is a system that we can be described as dynamic. Dynamical systems are fundamentally changing systems that at the same time stay stable. So, if you are fundamentally changing but at the same time you have stable regimes—well we are very comfortable with describing systems like this—they come to some equilibrium. Systems tend to stay stationary even though they are undergoing change because of these equilibrium states. So you can imagine then that there is an interesting interaction between the products of brain which would include mind, which would include behavior and communication, feeding back to cause the brain to also absorb those consequences we call experiences, and make changes. In a sense, we have created the concept of a mind as if it is separate from the brain, but it is actually integral to the brain. And once you realize that, you start to recognize and get back to where your question started. You get to realize that minds have a set of consequences outside of the brain that are very hard to separate from the brain.

To summarize: it's a matter of degree, I would argue, where you draw the line between the realm of the mind and the realm of the brain. And again another matter of degree where we say we are in the realm of mind and society or culture. How all of these connections occur across beings, people, groups of people, and even to my dog. We also communicate and share, and we do it exceptionally well between me and my dog compared to other dogs or to the rabbit that I had when I was a child. All of these things are a matter of degree from one point of view and a lot of it comes from us not really understanding how you get from one state of being to another state.

MVE: This connects to the concept of the zero-sum game, something that when we first met in New York resonated most after our conversation. This is the idea that you have a certain amount of information or storage capability and in order to remember something new or have new experiences, when your storage capacity is full, you need to override

older ones. For the brain, I can kind of get my head around it (no pun intended). But, for the mind, I was wondering if it can only exist in my idea of it as something that can grow almost infinitely because it is being fueled by so many, and increasingly more human brains that add experiences to that mind. How does that work? As you say, we have an interaction, our minds are connected, but when I pass away, my brain would go away although that experience would still be "in the mind" because you are still there. Your brain keeps the memory of our encounter alive. I was wondering if the concept of a zero-sum game can be extrapolated on the mind. Can it be "full" at some point and is it doomed to overwrite previous offloaded experiences if it wants to store new ones?

AF: We have to be careful about a zero-sum game as it just means a conservation, if you will. It doesn't mean that when you have arranged the parts, that you have it in an optimal way, so you can, by rearranging the elements of a brain, optimize that brain for having enormous storage capacity without actually having to get another brain. A really good analogy that I like is to think about the computer that we have here. It's incredibly powerful, it uses an enormous amount of memory, and almost everything it does, you could do with endless amounts of memory. But you don't have to do it, you don't have to write efficient code. You can write code that is very inefficient but is easy to transform and share. If you had memory limits, if the technology limited the amount of memory we had, we could accomplish the same functions, it might take longer, it would take planning, it would take building a whole new code base every time you had an insight into how a processor could work. But we don't have to do that, we can expand the memory limits by reorganizing what it is we transacted.

As an example, we have abandoned many concepts that we had in the ancient world or even 20 or 30 years ago that we don't generally use because it turned out that they were wrong, inefficient, or misleading. I will give you a very powerful example: the idea of race.

Race is a concept, it is only a few hundred years old, we didn't have races, believe it or not, three/four hundred years ago. But we have that concept right now and it is structuring an enormous amount of what we do as humans. It is constraining and enabling from some points of view, whatever it is, it isn't neutral. And it is one of the most powerful concepts we have, but it has no foundation in the material world, no foundation in biology. People spent a lot of time assuming it would, but it has none, from as much scrutiny as we have been able to provide. The prediction is that in 100 years we will not have this concept anymore, and it will not occupy our mind or constrain or direct our minds, but we have to manage living with those concepts right now. Whether or not I believe the concept of race is going to change how I interact with another person, I can't hold the concept of race as being absolutely false and immaterial and also something that is potentially valid and real and interact with you in a way that is independent of those two ideas. I have to pick one or the other. I chose that as an example because I think it is a very powerful example, but we could choose hundreds of concepts.

MVE: Another is gender for example. The perceived or learned differences between gender has such a big influence too, until today, and probably didn't exist in the past and hopefully will not exist in the future.

AF: That's right, this is the next one I would say, and people think of these as fundamental things. The supreme court in the US is very concerned about this, but these are just ideas and they evolve.

MVE: I agree, and the same goes for national borders or nation-states, all of these things are just concepts and they change constantly too, although some faster than others… I would like to go back to external memory storage and make a link with the role of art in the history and evolution of external memory devices. Within my doctoral research, I am looking at art as the first example of representational abstraction. The oldest abstract drawing and the first symbolic scratches on a piece of ochre were found in Blombos cave in South Africa

and date back about 100,000 years. It is clear that the lines meant something—we don't know what, and we will probably never be able to figure out what they stood for and how they were used—but we know they were not random or accidental. I believe that that was the initial role of art: to function as a facilitator to create representational abstraction outside of the human body, and by doing so, allowing us to enhance our storing capabilities. Do you think art can be considered the earliest memory device, the earliest example of the externalization of memory?

AF: It certainly feels that way, depending on what you want to say came first, but you might consider in the expanded view that I think I have professed, and you might not make a very big distinction between what you might call art and what you might call a tool.

MVE: Sure, the tool as artefact.

AF: The tool also has these features. The artist or the toolmaker, somebody has taken their understanding of something, the understanding is typically very rich, and they have compressed that understanding into a set of principles, or a set of most informative features. Extracting the facets that are most informative that's what the artist, toolmaker, communicator, needs to do. We call that abstraction because I don't know how to take the richness that I have in my head and put it in the world. I have to find out by abstracting what is essential and I will attempt to make that communication through art, or a tool. This allows me to do something, to show someone else something, it allows me to embody the thing that I had so that I can observe it.

I like very much the idea that in neuroscience we are studying things that we cannot see, and that we cannot experience directly, and so we don't make art, but diagrams, cartoons, animations, models of these ideas we have that are partially observed. But more important than how they are observed is how we conceive of them. We do this to show them to other people, and "the other people" that I do this for, mostly, is myself. If I can put it on paper or in a form that I can now observe, I can recognize what I abstracted and whether the abstraction was effective or not. For example, you can observe and see that there is another piece that is essential and I forgot and so I can put it down. I am able to understand it that way, so yes you can imagine this as a way to communicate from one brain to another, but it is also a way for me to communicate with myself; to think, if you will, out loud…

MVE: … and revisit a concept that you put down on paper that is now liberating space for other concepts, and you can revisit it and look at it and understand it again.

AF: That's right, and the goal is not to represent a thing as it is. I think we falsely understood it that way. But the goal is to represent my understanding of a thing that I have; the goal is abstraction.

MVE: Yes, and I think the only way of doing that is through repetition and it doesn't matter how many different media we invent, we will always have to have repetition that comes along because when I talked about the first abstract drawing and the symbolic scratches, that was already a next step in the externalization process of memory. Art enabled abstraction, and art I would see as something very vast, including music, sound, rhythm, and movement, because these were the first steps in the externalization process where you still are in need of the body and it is very clearly related to repetition to externalize it. But even when you have something like a physical object that becomes part of the equation in which you make scratches and marks, you will still have to repeat it because without explaining the abstraction no one will understand it, probably not even yourself, maybe for a certain while. But if you don't revisit it from time to time, it will also escape your own understanding. So there is something super interesting about it, that whatever we invent as a technology to remember something outside of the human body, we still need the methodology of repetition and renewal to make sure that we understand the same thing. Otherwise, we don't know what letter and what sequence of letters has what meaning, and still then, the interpretation of that word changes over time.

Reproduction of a crosshatched drawing at Iziko Museums in Cape Town, scratched on a piece of ochre, excavated by SapienCE, Centre for Early Sapience Behaviour in Blombos cave, South Africa. Photo: Maarten Vanden Eynde, 2023.

Storage room or physical archive of SapienCE at Iziko Museums, Cape Town. Photo: Maarten Vanden Eynde, 2023.

AF: What you just described is what we talked about 40 minutes ago! This is biological memory! There is a deep reason, it's not the protein's fault, it is the opportunity, we do it no matter what. Anything that we try to do that is enduring we make it so that it is evolving and adaptive and allows us through the process of repetition to come to the process of understanding. I think many of us ordinarily confuse ourselves by believing that the goal is actually to capture something and have something not change, but no one wants this. Some people have exceptional memory capabilities and remember everything that happened to them in all of its detail, and this is considered a pathology. If you ask people with this specific condition of remembering if they are happy about their ability, they will say no, they are miserable for these abilities. Are these people high-functioning and can they do anything in the world? Typically not, because in the way humans have organized themselves, this is not a feature.

MVE: Indeed, it's rather continuous change, and if you don't change along, you will stay behind alone as the only one who knows exactly what happened but no one wants to talk with you.

AF: That's an astonishing fact and yet we want to praise memory and so on. Again, I think the challenge is that our ordinary concepts of this are mistaken. They have not embraced the notion that information should not stagnate, that information should change, and the reason it should change is because you interact with it. By that interaction, it changes and it changes you, and it is good that this happens. This is where we actually live, this is where we grow, this is where we refine, this is how we communicate, this is how we improve. Trying to keep something stagnant that is fundamentally dynamic costs enormous amounts of energy and is misguided.

MVE: To continue the thought of constant change, I was wondering what new words or concepts will be invented in the future to talk about memory storage, because it seems that throughout history we have always used concepts related to current technology to describe how our memory works. Think of uploading, processing, and reformatting information in the current computer age. With memory being written on DNA and data storage becoming biological, what kinds of words would we use for this technology? What if we were able to store information not on a device outside the biological body, but on something that can be implanted and thus internalized again as a brain supplement to enhance our memory from the inside? Since you are closest to that new evolution, maybe you can think of some concepts or words?

AF: I will give you a concept that you will not find people on the street nodding to: dynamical system. Memory is part of a dynamical system, and memory is stored inside the dynamics. What does that mean? I will use an analogy: you can arrange a bunch of people, you put them together, you give them an economy, places to live, and so on. And so now you have a structure that is evolving but also stable: it is called a city or neighborhood. There are certain elements of that neighborhood that are guiding infrastructure. People will tend to pass on certain paths and particular roads, but not others. Shops and places for commons will follow that traffic, and places of recreation will follow other routes.

If you go to your neighborhood park, whoever designed it designed it with certain walkways. Out of convenience or whatever reason, humans typically go across the grass. They mat it down, and the next person comes and they question where they will go and they go the same way, and so this creates a path. These are the dynamics of the system and the information is getting stored in the dynamics that the architect didn't design. It then becomes the place to leave your wallet, the place to leave your cigarette butts, the place to carve your name on the tree. The dynamics actually provide the clay of old in which we can inscribe. When we use the clay and pen tablet as our concept of memory, we are now developing that, why?

Maarten Vanden Eynde, The Last Human (2017). Photo: Philippe De Gobert.

Because we are studying that, that's how I look at this, that's how I measure it, I am not measuring one protein, I am measuring hundreds of proteins interacting with each other, thousands of them are surely interacting but I only know about hundreds. When I talk about a neuron, I know that a million neurons are at least interacting and it is through the dynamics, the structure of their interactions, which neurons talk to each other and which neurons don't talk to each other. Like the structure of a social network that today many people are familiar with.

The idea of a network is a very old concept but most humans weren't familiar with it. But we are now, through social media, aware of the networks that we engage with, the human networks, so we can understand now how rapid information transfer can go, because of these networks. What is valuable about this experience—to the extent that I know and study memory—is it turns out we are studying memory with those concepts. Whether it's because of the availability of those concepts and their use in greater society that we now use those ideas to study memory or vice versa, we know the brain operates with these concepts, we have embodied them and built systems around them because they are natural for us. I don't know which way it works and maybe it works in both directions, but currently, those ideas allow us to make quite a lot of progress in our understanding of the biology of mind and the biology of memory and thought.

At the same time, it should be relatively straightforward to communicate because we have a common language. The way people interact which each other. They say: "what are you doing this Friday evening?" "I am going to a networking event." Thirty years ago, no one I

know would ever say that, no one would understand what you could possibly mean by that. Today everyone understands. You know that you are not necessarily meeting a friend at the event, but you hope to leave with people that you will now engage with for some purpose. Why are you going there, I frankly don't know, the purpose is literally to network.

MVE: Maybe when we are more aware of how it actually works, this additional experience, if it connects to the understanding that its a constantly changing regenerating experience, maybe this idea of metamorphosis is something that becomes part of the curriculum, and that we say in the future we go to a regeneration event because we know our proteins will be changed because of the experience. Or a morphing event. "I am going to morph this weekend and will be a different person on Monday."

AF: That becomes the goal, imagine that! If that was the goal, because currently it's more like "I want to be me and I don't want to change," but the goal is now to go in order to change.

MVE: And live with the constant dynamics.

AF: Yes, yes. And I know how to deal with it, so it's fine.

MVE: That's a good note to end on. Thank you so much for this inspiring neuron exchange. My brain will never be the same again!

André Fenton is Professor of Neural Science and Director of the Center for Neural Science at New York University. He investigates the molecular, neural, behavioral, and computational aspects of memory. He studies how brains store experiences as memories, how they learn to learn, and how knowing activates relevant information without activating what is irrelevant. His investigations integrate across levels of biological organization, his research uses genetic, molecular, electrophysiological, imaging, behavioral, engineering, and theoretical methods. This computational psychiatry research is helping to elucidate and understand mental dysfunction in diverse conditions like schizophrenia, autism, and depression. André founded Bio-Signal Group Corp., which commercialized an FDA-approved portable, wireless, and easy-to-use platform for recording EEGs in novel medical applications. André implemented a CPAP-Oxygen helmet treatment for COVID-19 in Nigeria and other LMICs and develops the use information technology for the patient-centric coordination of behavioral health services that is desperately needed to equitably deliver care for mental health. André hosted PBS' NOVA Wonders, and chairs the NIMH Board of Scientific Counselors.

Maarten Vanden Eynde is a visual artist and co-founder of the artist-run initiative Enough Room for Space. His practice is embedded in long-term research projects that focus on numerous subjects of social and political relevance such as post-industrialism, capitalism and ecology. Since 2020 he is a PhD candidate at the UiB / University of Bergen in Norway studying material traces that could represent human presence on Earth in the far future.

*All photos provided by the author.

Correspondence:
Maarten Vanden Eynde, maartenvandeneynde@protonmail.com.

Cite this article:
Vanden Eynde, M. (2023). "Before I Forget: Learning To Live With A Dynamic Memory System. A Conversation with André Fenton." *Commodity Frontiers* 5: 48-59. doi: 10.26300/73gk-8984.

Commodity Frontiers is an open-access journal edited by the CFI Editorial Board, Mindi Schneider, senior editor. Read it online at the Brown University Digital Repository, or our website, commodityfrontiers.com.