



# 8th annual melon forum

The Melon Forum provides a space for graduating seniors to share their culminating academic work in food systems study. The event borrows its name from Yale's beloved Mellon Forum, which bring together seniors in their residential colleges to present their theses. Convening students from a range of disciplines and departments, the Melon Forum celebrates food systems scholarship at Yale College. It is supported by a generous gift from the Northern Greening.

The Yale Sustainable Food Program serves as a hub for creative and critical work on food and agricultural systems topics that are entangled with pressing problems of global significance. On the farm, in the classroom, and around the world, we aim to grow food-literate leaders.

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**senior essays**  
**on food and**  
**agriculture.**  
**2020 - 2021**

# Epongue Ekille

## "Agriculture is a part of me": A History and Personal Narratives of Farming in Cameroon

Cameroon is a country with a unique colonial history, having been colonized by not one but three different European countries within a century. The Germans, French, and British established Cameroon as an agricultural powerhouse with the establishment and maintenance of plantations, but at the cost of forced labor and the loss of many Cameroonian lives. Even through independence, however, Cameroonian farmers have been generally neglected by governing bodies in the agricultural chain, with the vast majority acting as just producers and not as processors or manufacturers. These economic factors and the spread of Western ideals have caused many young people to leave their homes in rural areas and seek education and employment in urban areas and even in other countries. I was interested in this phenomenon and the stories of Cameroonians who decided to leave their rural villages to pursue other endeavors. By investigating Cameroon's political and agricultural history since colonial rule and interviews with two men in their 60s and 70s who spent their childhoods in rural Cameroon, I put personal stories to the political history of Cameroon. I was heartened to find that some Cameroonians still have fondness towards agriculture despite many uncertainties during their childhoods.



## Behind the Bottle: Women's Drinking Spaces and Class-Stratified Drink Preferences in Late-Victorian Britain

Despite social assumptions that women lacked knowledge and expertise in alcohol consumption, new drinking habits based in public spaces for British women in the second half of the 19th century changed not only women's drinking preferences but also affected the overall liquor market in Britain. Class not only determined where women could drink but also their drink options. In all levels of society, women were responsible for some aspect of alcohol purchasing, brewing, or selecting. The lower a woman's status, the greater freedom she had to drink in public and enter male drinking spaces, but the less freedom she had over what she could drink. Until the 1910s, the gendered rules of drinking spaces defined female drinking habits. Through an analysis of women's newspapers, Ladies' Pages, and conduct books, my thesis demonstrates how women, though often ignored in male spaces and discourse on alcohol, were part of a secret army of drinkers, one in which their tastes and preferences affected the global market.

# Natalie Boyer



# Tomeka Frieson



## Breakfast Is the Most Important Fight of the Day: A Historical Examination of the Public Health Implications of the Black Panther Party's Free Breakfast Program

In 1969, the Black Panthers started the Free Breakfast for Schoolchildren Program in Oakland, California, to provide Black and poor youth a chance to eat nutritious breakfasts before school. The Free Breakfast Program grew immensely in popularity, and by the time the last Breakfast Program closed in 1980, the Panthers had provided daily breakfasts to children in 45 cities across the continental United States. The purpose of this thesis was to understand the public health legacy that the Panthers left as leaders in providing free food to people in need. Accordingly, this essay argued that the Free Breakfast Program was more than a grassroots public health intervention; it not only improved the health of urban, poor populations, but provided children with an education, agency, and a sense of belonging within their Black communities. Moreover, this essay maintained that the Free Breakfast Program played a large role in shaping the priorities of national food assistance programs for years to come. By providing breakfast foods that were traditional to African American culture, the Free Breakfast Program played a large role in promoting health and resilience among Black people, even in the face of a government that tried to shut it down.

## "Liberate Us from Such Bread": An Institutional Analysis of Grain Distribution in Late Merovingian Society (ca. 650-751 CE)

Grain cultivation has lent itself to unique economic distributional institutions since the earliest of states, with the Roman annona perhaps being the most famous example. Late Merovingian (ca. 650-751 CE) society, and Early Medieval society more generally, is often seen as lacking this sort of economic complexity. This essay challenges that view by using a historical framework drawing from institutional and historical economic theory to integrate recent climatological and findings. The revealed environmental and economic pressures dispel the idea that landholdings were autarchical. Letter collections, monasterial accounting documents, and royal legal formularies now reflect a royally-mediated grain distributional system between these non-autarchical landholdings developed from unique legal and social traditions. These findings change the interpretation of the Late Merovingian state and Early Medieval economic history more generally. Furthermore, the interdisciplinary framework developed in the essay has potential applicability in other areas of pre-industrial economic history where traditional sources are sparse.

# Grant Halliday



Environmental  
Engineering Major.

Advisors:  
Professor Jaehong Kim and  
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Advisor:  
Marlyse Duguid

Art and Environmental  
Studies Major.

# Marlena Hinkle

## Modular Advanced Oxidation for Decentralized Water Treatment

As water scarcity, unprecedented water pollution, aging infrastructure, and climate change pose threats to our modern water systems, novel technologies must be developed to ensure a reliable and safe water supply for all. The growing gap between water demand and supply has led to a reconsideration of the centralized water treatment and distribution paradigm in favor of more decentralized, point-of-use treatment options. My environmental engineering senior research in the Kim lab has explored advances in material science to develop modular water treatment technologies that aim to minimize the energy and environmental footprint of traditional treatment options. Specifically, my work focused on applying electrochemistry to develop advanced oxidation processes (AOP) for decentralized water treatment solutions. The first part of my project focused on developing a selective and efficient electrocatalyst for the electrochemical generation of hydrogen peroxide in a gas diffusion reactor that uses only electricity, polluted water, and air as inputs. The second part focuses on developing an AOP system that activates the hydrogen peroxide to hydroxyl radicals for the degradation of pollutants in the water. Essentially, the modular treatment system aims to eliminate the reliance on chemical supply by generating and activating hydrogen peroxide on-site, making the technology more applicable to decentralized uses.

## Insect Diversity in Neotropical Coffee & Cacao Agriculture: A Review of How Different Management Practices Affect Insect Richness and Abundance

Insects are one of the largest and most diverse groups of organisms on Earth, and are particularly rich in the Neotropics. Their various ecological roles and functions make them vital to maintaining ecosystem health. Despite this, they are facing an ongoing, global biodiversity crisis driven by anthropogenic factors like agricultural intensification. In light of this drastic decline, some farming communities have turned to more sustainable, less intensive practices like agroforestry in which crops are cultivated alongside trees. My thesis analyzes and compares insect diversity—species richness and abundance—between forests and agricultural systems of different management intensities (like intensive full-sun monocultures vs. low intensity agroforests) in coffee and cacao crops. The results of the literature review I conducted suggest that insect species have distinct responses to different levels of agricultural intensification since increasing and decreasing diversity with increasing management intensity were reported in the studies examined. This further supports other conclusions the studies drew including the importance of nearby forests, effects of other environmental factors, and the conservation potential of agroecosystems. Consequently, these factors should be considered in addition to the impacts of management intensity for developing sustainable agricultural practices that contribute to insect biodiversity conservation.

# Kitty Kan





# Micah Clemens Kulanakilaikakai'ale'ale Young

*Economics Major.*

*Advisor:  
Robert Mendelsohn*

## *Modeling Tropical Deforestation in Sub-Saharan Africa*

This paper examines several possible drivers of reductions in tropical forestland in Sub-Saharan Africa using panel data from 1960-2015. We find that the primary driver of deforestation is domestic population growth, which causes an increase in the demand for domestic cropland. A much smaller effect comes from income growth, which increases the domestic demand for livestock and grazing land. Countries with weak governments have slightly less deforestation pressure from crops because these countries have higher yields and therefore require less relative cropland. They also tend to have more deforestation pressure from grazing land. Although there is substantial woody bioenergy used in this region, it is not clear whether this leads to a loss in forestland.

*Advisor:  
Marian Chertow*

*Economics and  
Environmental Studies  
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## *Industrial Symbiosis & The Future of Food: Understanding Resource Flows, Business Strategies, and Value Creation in Symbiotic Networks*

With the human population projected to reach 9 billion before 2050, the global food system must learn to use resources more efficiently, minimize waste, and develop more innovative models of production to sustainably meet demand while reducing negative effects on the environment. Addressing this need for circularity and resource cycling, the rapidly evolving field of industrial symbiosis (IS) may offer a potential solution to these challenges by 1) enabling higher quantities of food production, 2) increasing resource efficiency at various nodes of the supply chain, and 3) decreasing environmental impacts such as CO<sub>2</sub> emissions. Through a three-part analysis encompassing 45 symbiotic networks in 19 regions, this thesis explores elements that can help IS shape a more sustainable food system and offers insights on feasible resource flows, strategic business models, and opportunities for value creation within existing and developing industrial clusters. Additionally, this project highlights a need for a) more quantitative data collection in firms and clusters, b) a higher degree of data standardization, and c) future research specifically studying food in IS networks.

# Amanda Zhang

