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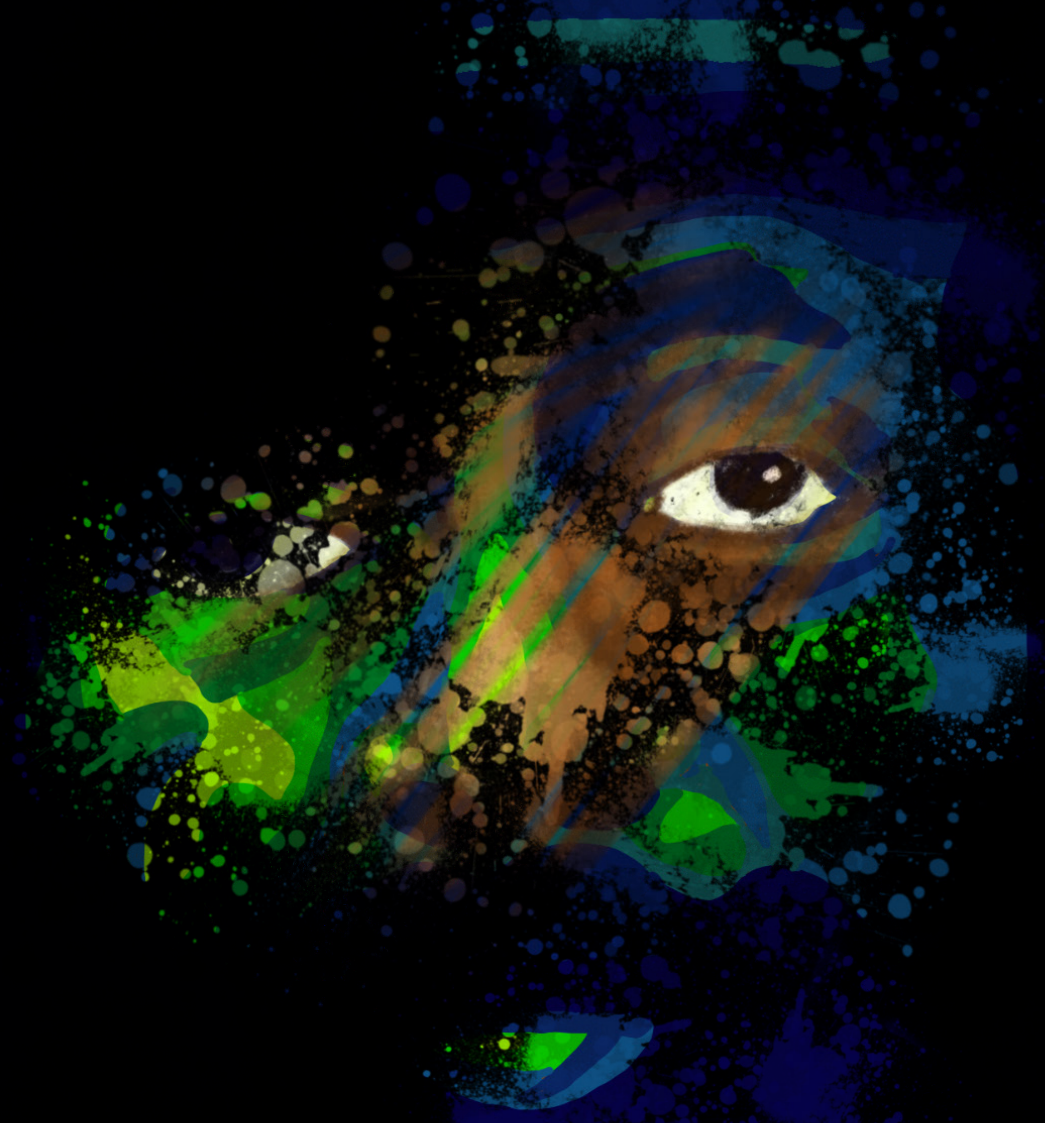

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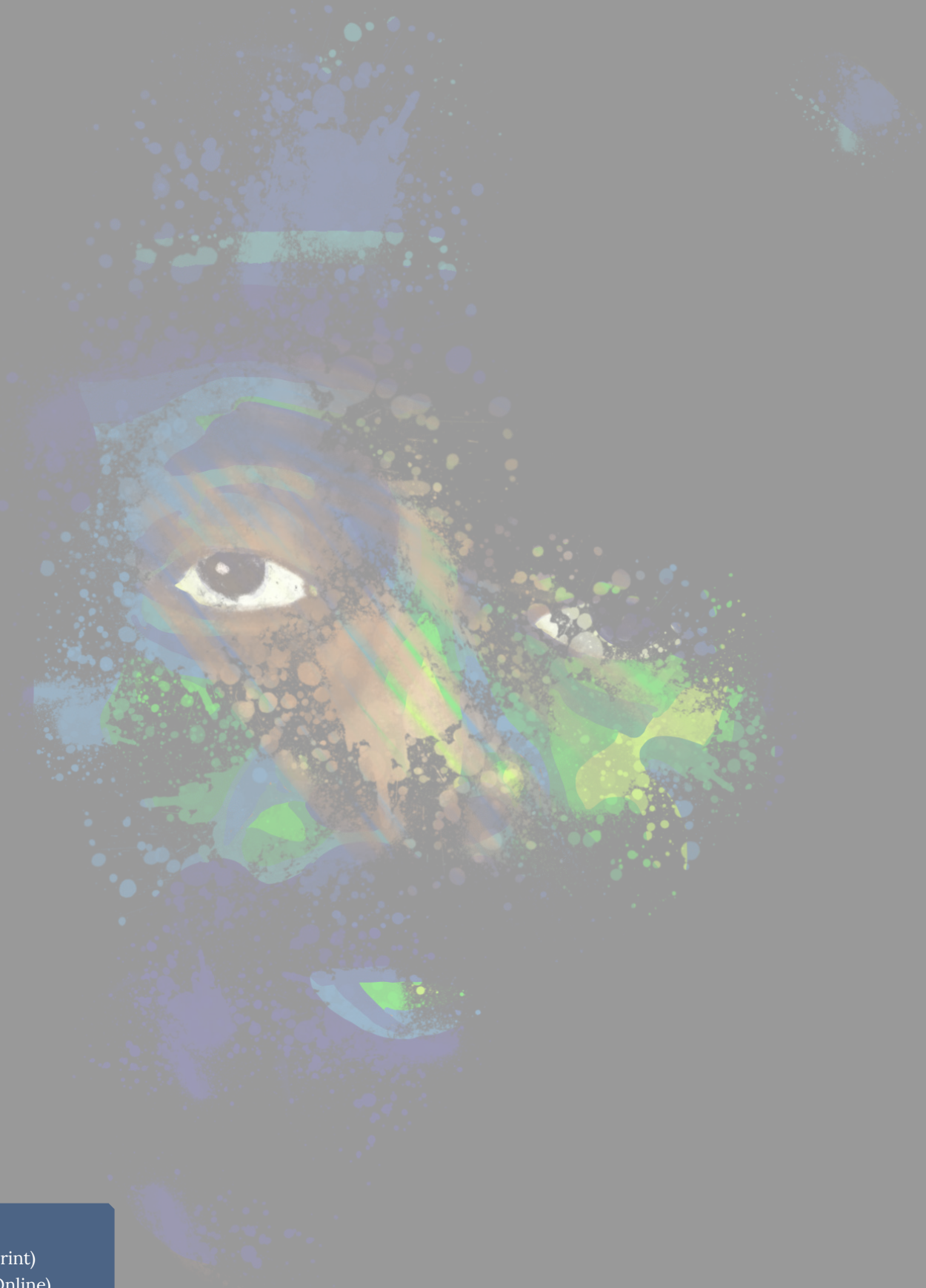

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Letter from the Editor

Dear Contributors and Readers,

As the editor-in-chief of *Discussions: The Undergraduate Research Journal of Case Western Reserve University*, I am delighted to present the latest edition of our publication. From comparing sustainable farming methods in Brazil to the insightful analyses of the Karamu House in Cleveland, each article in this issue represents the dedication and intellectual curiosity of our student researchers. Whether you are a fellow undergraduate researcher or simply someone with a passion for knowledge, I trust that you will gain something from these pages.

I extend my heartfelt gratitude to all the contributors who have submitted their work for consideration. Your commitment to scholarly excellence and your willingness to engage with complex topics and questions are truly commendable. Your contributions enrich not only our journal but also the broader academic community.

Furthermore, I would like to acknowledge the hard work and dedication of our editorial board. Your tireless efforts behind the scenes have been instrumental in bringing this publication to fruition. I would like to especially express my gratitude to our staff advisor, Sheila Pedigo, for her steadfast support throughout all the victories and valleys along the way. Without everyone's commitment to excellence and unwavering support, our journal would not be possible.

This year marks the graduation year of the students who started their undergraduate degree online in fall of 2020—this includes the first cohort of our Editorial Board that never knew what Discussions was before the pandemic. Regardless, I can boast that our growth over the past few years has been tremendous and wonderful to be a part of.

As I prepare to walk across the stage, it feels bittersweet to wrap my head around the four years I've spent as part of Discussions. To my editorial board, thank you for making this organization a part of your journey. It's truly been a privilege and joy working with you.

While we celebrate the achievements of our undergraduate researchers and journal, let us also look forward to the future of academic inquiry and discovery. May this journal continue to serve as a platform for fostering intellectual curiosity, promoting interdisciplinary dialogue, and advancing knowledge in all its forms.

Sincerely,

Grace Huang
Editor-in-Chief

Discussions

The Undergraduate Research Journal of CWRU

university media board

Undergraduate Research Office

Dr. Maggie Vinter: The Early Modern, Now

Interview by Mariana Parilli-Castillo

Credit: Mariana Parilli-Castillo

BIOGRAPHY: Dr. Maggie Vinter has been the specialist in Early Modern (pre-1800) literature and Shakespeare at Case Western Reserve University's English Department for the last eleven years. Prior to that, she received her doctorate degree at Johns Hopkins University in 2013. In 2019, she published *Last Acts: The Art of Dying on the Early Modern Stage* (Fordham University Press), where she explored not only the theatricality and farcicality of death in the theater of the 15th and 16th centuries, but in the act of death as a whole. In particular, this research is based upon the existence of "death books," which detailed the correct ways to both prepare and practice for death. Some of her current research is based on earworms (or fragments of words and songs stuck in a character's head) as a sign of interiority and conscience within Early Modern characters. Some of the classes she currently teaches at Case include the "Renaissance Literature" series — which includes such topics as "Gender and Sexuality" and "Magic and Science" — "Shakespeare and Film," and survey courses on Shakespearean literature.

Q: Could you start with an introduction for our readers?

A: My name is Maggie Vinter. I'm currently on the tenure track at Case Western Reserve University and I teach Early Modern literature—Early Modern being mostly 16th and 17th-Century British literature. I teach everything by delving into my research. I tend to focus mostly on drama, so Shakespeare and his contemporaries: Shakespeare and friends, if you'd like.

Q: What sparked your interest in Early Modern literature?

A: That's a hard question. When I was an undergrad and at the beginning of graduate school, I liked reading widely. So, in terms of what I read for pleasure or to educate myself, it included anything medieval or 19th-century onwards. But I always felt that with Early Modern literature, I had more to say. I find it really hard to talk about contemporary literature because I feel too close to it. It's hard for me to tell what's important or what's interesting because it's too close to how I live. Early Modern literature is unfamiliar enough that it's easier to get some distance on it and have a sense of the questions that people are asking. It is easier for me to see how they fit into cultural shifts or the political undertones they might have. Also with Shakespeare—the other dramatists too, but particularly with Shakespeare because he's performed so much—people are constantly finding ways to pull things out of Shakespeare that are still relevant to contemporary problems. And I don't think that's because Shakespeare was this massively prescient person who anticipated everything that came after him, but I think history and older literature can be really helpful for giving you an unexpected angle on the contemporary. In some ways, the same problems just come around. Yet, in other ways, things that are obvious to them are not obvious to us and vice versa, so it's usefully estranging. For example, both people in the period and now are very interested in female sexuality, what it is, and how you define it. However, the stereotypes about female sexuality are completely different from the Renaissance compared to today. Today it's generally assumed that—in an oversimplifying manner—men are more interested in sex and women are the less promiscuous gender. You go back to the Renaissance, it's the opposite. I don't think it's a matter of "they were right and we are wrong," or the other way around, it just makes you appreciate how things you think of as kind of fixed about how the world works are contingent on a particular historical moment and a particular set of beliefs.

Q: What is your favorite piece of Early Modern literature and why?

A: Oh, that's so hard. Because it depends on my mood. It is

Shakespeare, and it's very hard to choose between two plays. *King Lear* is the one play that just makes me cry. My interest in *King Lear* is separate from my research interests in that I find *King Lear* so moving and so beautiful that it's very difficult for me to say anything intelligent about it. I just want to sit and marvel at it. I've never written on *King Lear* and I probably never will because it's the one thing I don't want to break by trying to pull it apart.

The other one I love—which I have written about—is a history play called *Richard II*. I love it because of the poetry. It's a weird play because nothing much happens in it. Richard II, in the play, is somewhat of a bad king. He alienates the nobles, and one of the nobles is exiled and comes back to overthrow him. It's a bit of an embarrassing rebellion. There are no battles. There are no big, climactic action scenes in the play. It's just Richard II being really sad that he's lost the throne. But the poetry is just stunning. Just some of those lines that I come back to repeatedly as an expression of grief and just how intricate the imagery can be.

> "Earworms are this really weird form of memory, because they're involuntary, like, you don't choose to remember any of them, it just gets in there. And it repeats itself perfectly in the way you're remembering it in your head."

Q: Building upon that: Oftentimes, when talking about Early Modern literature, other authors are pushed to the side in favor of Shakespeare. In your opinion, what are some Early Modern plays not by Shakespeare that more people should know about?

A: One of them is *The Duchess of Malfi* by John Webster, which is a really macabre tragedy. Once again, it has really crazy imagery. Some of the poetry is some of the nastiest comparisons yet done in such a beautiful manner. It also contains some weird, absurd details including a werewolf, people doing weird things with body parts, and somebody poisoning somebody else by getting them to kiss a poisoned bible. So it's over-the-top, and gothic, and fun in that way—but at the same time, the language is so good. And it's interesting too because it's about a young widow who's told not to marry again by her brothers—whom she ignores—and marries a social inferior. And she seems happy in her second marriage until her brothers destroy it. So it's a nice image of a woman trying to assert herself in the face of forces trying to control her.

And then a fun one I like is a Ben Johnson play called *Volpone*. And it is really, actually, genuinely funny. Volpone is an old, rich guy with no children who just spends all his time pretending to be deathly sick and people come over and give him presents because they're hoping that he'll leave them money in his will. But he's not actually dying, he's just keeping the presents. So, it's a comedy about dying, which shouldn't be possible in common literary conventions. Johnson is also great at the business of theater. He's skilled at scenes where somebody is hiding in a closet and another comes in at the wrong moment and suddenly they're in a situation where you think, "There's no way he's getting out of this," and somehow he does.

Q: Building upon your point on dying, I saw that your 2019 book, "Last Acts: The Art of Dying on the Early Modern Stage," is built on the fact that in Early Modern society, death is not a passive happening, but rather an active statement of performance, and Early Modern plays then reflect that. Could you elaborate on some of your research for the readers?

A: I got really interested in this genre of devotional self-help manuals called *The Arts of Dying*. They're basically how-to-die guides. This is a very odd idea if you're thinking about death in the way most of us in the modern era think about it, which is that death is something that just happens to you, not something you really have any control over. The people in the Early Modern era did not deny death; they knew that you could not choose when you die or how you die, on a certain level, but they still thought it was something you could practice. They still thought you could think about how you're going to approach your death. While you may not succeed, you can try and manage how to die. They're reading these texts and thinking about death in a religious sense, but I also think that it has implications for how they would think about death and action more generally.

Death is what we often think of as the ultimate experience of passivity. Imagining these ways a person can assert themselves when they're dying, is a form of agency in the Early Modern era. Additionally, it's also useful when thinking about the theater. Because theater is a space where nothing actually happens in reality. You think about a tragedy: the whole point of a tragedy is somebody dies at the end. And yet, in reality, nobody dies at the end. If somebody dies at the end, something's gone wrong. And when you're acting out dying, you're just lying on the stage doing nothing. But you're still

acting because being alive is in itself an act. My argument in the book was that people in the era used these ways of performing death to think about other sorts of actions they may or may not take. How can you act in a religious world where there doesn't seem to be a lot of room for free will and most actions are predetermined by God, or how can you act in various political situations where you really don't have any sort of political power? And how can you act in these emerging proto-capitalist economies which seem to give all the power to institutions and not leave much for individuals? That was the theory I was building on and then I ended with some stuff trying to connect that to how we think about dying today and the ways in which people do or don't imagine death is something you can have an effect over.

Q: There have been various debates, specifically in Early Modern scholarship, between historicism and presentism. Could you give your insight into the conversation?

A: I'm going to be annoyingly even-handed, right? I think there's all sorts of things about early modern texts, which you can only understand if you pay attention to the history. There's a play by Thomas Middleton called *The Game of Chess*, which is the biggest hit of the Jacobean Theatre. It's about a chess game where all the characters are different chess pieces. What it's really about is the effort of James's son to secure a marriage with a Spanish Princess. So all the chess pieces are standing in for real people in the period. It was disguised as a chess game to get past the censors. Like I said, it was enormously popular because nobody ever did topical political satire. But, eventually, after the authorities take way too long to figure out what it's actually about, they shut it down. And the guy who wrote it, Thomas Middleton, was never allowed to write anything for performances again. So you don't understand that at all unless you dig into the history. So there's a certain base level of needing the history to understand certain things.

At the same time, if the only reason something is interesting is because of its history, why bother reading it? If people want to, or people are just interested in costumes in a particular acting company and in the 1620s, they're gonna read all sorts of bad plays because they're revealing about the costuming. More power to them, if they're interested in that. But I'm only really interested in stuff if the questions it's raising feel relevant to me. I think, like a lot of us, it's hard to get excited about something if you don't feel a connection to it. And it doesn't have to be a literal connection. It doesn't have to be like a political connection or a topical connection, but you've got to care about something for some reason. So there are critical responses to plays that are explicitly situated next to contemporary politics. People that are writing about Julius Caesar and Trump or something similar. And they're all people who were kind of more obliquely like, it's in the wake of George Floyd like there's been a real outpouring of very good work on race in the Renaissance. Like how Shakespeare and other playwrights are depicting race. And it's not directly responding to the current situation. But it's like it's a question people only become interested in because they're aware of its importance in their lives. So yeah, I think you have to kind of keep one foot in the present and keep it relevant and one for the history, or you're just going to misunderstand some things would be my take.

Q: Are there any key misconceptions about either Early Modern literature or Early Modern society as a whole, especially when it pertains to your research or interests?

A: So here's the one I would say. And I think this is not just about modern conceptions of early modern history. This is about any earlier period. There's always a tendency to oversimplify, and we're all guilty. I'm guilty of this sometimes, too. You know, if you think about an audience at Shakespeare's theater, you can fit a couple of 1000 people into one of those theaters, you can pack them up really tight, right? And there's going to be a whole range of opinions in that space. It's not like everybody in Elizabethan England thinks the same way about anything. You're gonna have a range of opinions. And you know, what's going to be the most common default opinion is going to be very different to what it will be after. And if you assembled a similar number of people in an oval auditorium, there's always going to be a range of opinions. So I think just being aware that these audiences were mixed is important.

And then the other thing is that people weren't stupid, right? It's always tempting to think so. And I do this to write about a kind of caricature people and think, "Yeah, they thought about this, they thought that the sun goes around the earth, and the body is full of four humors. And, if you hang out too many times, under the wrong type of stars, you get bad influences, and then you get influenza." And then the subtext is like, "Weren't they idiots?" But they're thinking in really sophisticated ways about other stuff. They're making really fine distinctions, often in theology, which most of us don't have the vocabulary for anymore. Even science, when it's from our perspective, is objectively wrong. They're doing their best to reconcile the evidence they have about how the world around them works and trying to form a reasonable hypothesis. So, I want to try and show them respect. Even when their ideas are wrong, or when they seem apparent to me, I want to hold them out to say, well, let's try and think

about why people thought like this. Let's try and think about this: is there anything useful in this way of thinking, even if the conclusions are wrong? Or, if nothing else, is there a cautionary lesson to us about how you can be so certain that something is the case when in fact, the opposite is the case?

Q: Especially when it comes to students interested in following the path of a literary researcher, yeah. How do you find what you want to focus on in your next research? Do you actively search the works that you've read or do you read for new types of interpretations? Or is it a more naturalistic way in which you just find that pattern somehow?

A: You get a certain reputation for doing a certain type of scholarship and every so often, somebody will write to you and say, "Can you write something about 'x'?" And then you have to go away and do a bit of research, make strategic decisions about, "Okay, what text haven't I talked about yet, which might talk about this matter? How can I think of something new to say about this?" And I do that. But I don't think that's where my best ideas or my best writing comes from. Yet I notice a pattern that bugs me. Quite often, I'll think I'm writing about one thing. And I just have to explain this bit first, then I can write about the thing I care about. But then you end up going off on a tangent and down the rabbit hole. There was an essay I had published at the beginning of this year that took me a couple of years to write because I'm a slow writer. And when I first started writing, I thought I was writing about people quoting Shakespeare. So, I first was going to write about people imitating Shakespeare or quoting him in later works. But then I needed to write about Shakespeare quoting people first. I was arriving to know I needed to do that. And then somehow it morphed into a project about earworms. I just got really, really interested in earworms. So now I have all of this stuff about Early Modern earworms in *Hamlet*. Such as how people were thinking about songs or fragments of speech getting stuck in somebody's head and moving between people and how they were conceptualizing that. It was a very kind of circuitous process. But what I thought I was writing and what I actually wrote turned out to be different texts with different subjects and different conclusions.

"But you're still acting because being alive is in itself an act."

Q: The earworm paper is particularly interesting. Could you elaborate on that?

A: If you think about most sorts of memory, like remembering a person or if you remember a novel or a play, it's a composite memory. You're pulling together a lot of memories from different moments from when you've known that person or that place, or that novel, you're synthesizing stuff, which happens all over it. Earworms are this really weird form of memory, because they're involuntary, like, you don't choose to remember any of them, it just gets in there. And it repeats itself perfectly in the way you're remembering it in your head. Musicologists have done studies on this: As long as it's more or less the same pitch, the same speed, the same instruments. It's just replaying itself. And people haven't really talked a lot about earworms before recorded music Most of the study of the study of them has been about recorded music. Later they see this and there does seem to be some sort of affinity between songs you can listen to repeatedly and how easy it is to get them stuck in your head. Then, somebody's singing a song, maybe they're singing it a slightly different way every time. But, you can find a few instances where people are talking about earworms. In Early Modern plays, the most famous example is Othello with Desdemona. She complained about getting a song stuck in her head, and then she started singing it. I was interested in thinking about what they are and what they do because they seem to have this interesting double function. One of these is connecting some of the stuff we're talking about in class today. One of the things they do is they suggest interiority. If somebody's getting something stuck in their head, they certainly have a head to get things stuck in. And often there's this temptation to read them symptomatically like, "Oh, you've got this song stuck in your head, because it's related to this thing you're worrying about". But, then there are also ways in which they seem purely mechanical if somebody's playing it over and over themselves. You've kind of turned into a recording device like the music has kind of hijacked you and made you empty. So, I was interested in how snippets of words and music are passed between different characters. When some characters get earworms stuck in their head, it's evidence that these characters are kind of deep. For other characters, when they get earworms stuck in their head, it is evidence that they're mad or stupid. Sometimes, even the same piece of music will pass between two people and one of them is a deep character and one of them is stupid. So, I was basically trying to think about earworms and characters.

Q: Thinking about the class you taught last semester, Gender and Sexuality in Renaissance Literature, how would you describe the interplay of gender in the plays—or general literature—at the time for our readers?

A: I mean, it's complicated and this is only scratching the surface. I think there's something there. This gets to the presentism I was talking about earlier, too. In the last 20 to 30

years, there's been a cultural shift in how we talk about gender. People are moving away from essentialist models of gender. That gender is kind of innate and tied to your body. They're more interested in non-binary genders, and they're interested in the ways in which gender can be performed and kind of fluid. People who talk about this often position themselves against the past where gender was seen as very essentialist. They're basically talking about the Victorians because they did have quite an essentialist vision of gender. They're like men and women in an innately different way. I think Early Modern gender is really interesting to go back to because people did seem to think of it as quite fluid. But it didn't enable the sorts of political liberation that we're seeing that people are saying that the contemporary kind of gender fluidity promises. People sort of say, "We can kind of escape these sexist binaries." People can express masculinity or femininity or be a gender in whatever way they want. This frees us from certain patriarchal structures. To massively oversimplify fluidity, in the Early Modern era, it's largely supported by examples such as structures. Gender is fluid, and anybody can kind of be a man or anybody could be a woman. Therefore, you have to really double down on rigid gender roles or everything's going to fall apart. That's not monolithic. That's the dominant cultural take on it. But then, there are all sorts of interesting opportunities for gender play. What's interesting to me is that we've taken this as politically liberatory, though they manifest in other forms when they're sometimes oppressive.

"I got really interested in this genre of devotional self-help manuals called *The Arts of Dying*. They're basically how-to-die guides."

Q: When it comes to your research, is it important to focus on both, literary works, and historical and religious texts? How would you represent the interplay that takes part in your research?

A: I always feel like my primary commitment is to write about texts that are good. I want to write about stuff that moves me in some way and is always beautiful. Oh, you know, every so often I'll read a piece of theology where—I'm not a religious person, but sometimes I'll read it and I'll say, "Wow, that's kind of profound and fascinating." For me, it's always bringing in history and bringing in theology or philosophy or whatever it is to help me understand the literature better. The payoff is if it helps me see something a little bit surer that articulates something in the literature.

Q: Oftentimes, contemporary readers find themselves lost when approaching early modern literature and thus avoid it. How would you recommend new readers approach this genre given the daunting language and writing style?

A: It's tough. I really try to be sympathetic, because it's a person. It takes a lot of practice. I have a lot of practice so I can read this genre more quickly. But I think don't be too scared. I mean, this is easy for me to say. Just the more you read, the easier it gets. The worst that can happen is you're going to misunderstand something. It's not like you're doing neurosurgery and you're going to kill someone, the worst that's going to happen is you might slightly misinterpret *Othello*. You probably won't. You'll probably understand what's going on. I think watching it if you have access to live theater or to recorded theater can be a really helpful avenue because performances are really good at kind of giving emphasis to certain words or using body language, or stage business to kind of clarify the meaning. This is a nice thing about the internet: there are so many film versions of plays available. If poetry is one of the hardest things for you, such as Early Modern lyric poetry which is very dense, the only thing I can suggest is to treat it like a puzzle. If you're somebody who likes crosswords or video games or something very dense like that. I remember when I was first learning to read John Donne, which was the one who stood out to me, sitting down with a poem for 45 minutes and just reading it and reading it and reading it and I was trying to comprehend it. Eventually, it all just kind of clicks into shape. It's so satisfying when it does it. So make it fun for yourself in the way that a logic puzzle is fun.

Q: Additionally, from the lectures that I've heard in your class, something that I've noticed is your interest in early modern adaptation of the early modern world. First, I would like to ask you: What role do you think adaptations of early modern works played both within themselves and in the popular consciousness? On top of that, I would like to ask you about your favorite adaptation.

A: I'm actually teaching a course on Shakespeare and its adaptation at the moment, which has been fun. I think adaptation has always been part of early modern theatre. For most of Shakespeare, and certainly for a lot of other playwrights, there are a lot of the plots are stolen from somewhere else. A lot of the plays themselves are adaptations. It's a literary culture that doesn't put as much value on originality as ours does. So it's like writing a really good translation of something or reworking a Greek myth or something similar that was seen as better to do than to come up with an original plot because those ideas are

tried and tested. "Who are you to come up with a new plot, you're probably no good at it" is one of the dominant ways of thinking about this in that period. People have been adapting Shakespeare since the 1660s. It's always been part of what Shakespeare is. Everybody's remaking it for their own moment. With the concept of a 21st-century idea, we should be relatively true to Shakespeare's original texts. Those are actually the historical documents. That's a strange way of thinking. I like adaptations. There are very few straight adaptations of Shakespeare that I enjoy. But, the more creative ones, which take it into new kinds of cultural spaces, show me new things about the place. Theorist Doug Lanier talks about this often. There's a traditional way of thinking about adaptation in terms of fidelity, where you think about how *Hamlet* is the tree, and all the adaptations are the branches, and we can assess an adaptation by how close or how similar it is to *Hamlet*. But in *Hamlet*, it is always the dominant texts and all the adaptations that are lesser echoes. He's like, "Why we can't think of all of the adaptations and handbooks listed together in a kind of web where everything is equally important?" One could say an adaptation is more or less similar to *Hamlet*, but one could also say this adaptation makes me think about *Hamlet* in a new way or adds another possibility to *Hamlet*. I was teaching a short story by Margaret Atwood titled "Gertrude Talks Back" and it is about Gertrude in the closet scene from *Hamlet*, but it's solely her talking and it ends with her saying, "Oh, yes, I killed Claudius," which obviously isn't canonical. That's not what happens in Shakespeare. But, the fact that that now exists creates new possibilities for the story. I think that's always productive. In terms of my favorite Shakespeare adaptation, or Early Modern literature—actually, well, most adaptations are Shakespeare because everybody else gets shafted. It's hard to adapt if people don't know the original. It all depends on my mood. But, there's a Japanese film, "Ran", which is an adaptation of *King Lear* as a samurai movie, which I love.

> "Somebody poisoning somebody else by getting them to kiss a poisoned bible."

Q: Finally, do you have any advice for any students interested in either more Early Modern literature or literary research as a whole?

A: Yeah, just read a lot. I know that's boring. Just read as much as you can, and read widely. People make the mistake of trying to specialize too quickly. If you read Dickens and Dickens's criticism, it's not going to be directly relevant, but the people who were writing about Dickens are going to have a slightly different approach to the people who are writing about Shakespeare. And you could employ that approach and benefit from knowing more. But yeah, we read a lot. That's really basically what you have to do. If you're at Case Western Reserve University, read books and go look at the Special Collections. They're so cool. I don't study a lot of history of books, but being able to actually touch texts from the period, is not necessarily giving you any textual information you can't get anywhere else, yet it feels like a certain form of connection, and he would encourage you to look at text you wouldn't think of picking up before because that's what's available.

Q: Yeah. Again, we don't have any first folios. Yeah, well, I think that's about it. Thanks so much. This was fun.

This interview has been edited for length and clarity with Dr. Vinter's consent.

A Selection of Dr. Vinter's Work

Vinter, M. (2019). *Last Acts: The art of dying on the Early Modern stage*. Fordham University.

Vinter, M. (2017). Mortal, martyr, or monster? Working on the king's corpse in the Henriad. In N. Das & N. Davis (Eds.), *Enchantment and dis-enchantment in Shakespeare and Early Modern drama* (pp. 38–54). Routledge.

Vinter, M. (2022). *Othello*'s speaking corpses and the performance of *Memento Mori*. In W. W. Engel & G. Williams (Eds.), *The Shakspearean death arts* (pp. 153–171). Palgrave Macmillan Cham. https://doi.org/10.1007/978-3-030-88490-1

Vinter, M. (2023). "Who's There?": Hearing character in *Hamlet*. *ELH*, 90(1), pp. 1–27. https://doi.org/10.1353/elh.2023.0000

Credit: Grace Xu

A Comparative Review of Soil Carbon Sequestration Methods in Brazil's Agriculture

DOI: https://doi.org/10.28953/2997-2582.1026

Skylar Cheng

ABSTRACT: Brazil is under unique pressure to adopt sustainable agricultural practices due to its intricate biodiversity and globally dominant agricultural sector. Increasing soil degradation, agricultural land expansion, and rising levels of atmospheric carbon are nationwide concerns that require multifaceted solutions. Integrated agricultural systems, which rehabilitate soils through crop, forage, and livestock rotation as well as biochar—a carbon-rich soil amendment—can address such concerns. These sustainable farming practices improve carbon sequestration and soil fertility; however, uptake remains minimal due to environmental, economic, and policy barriers. Accordingly, this paper proposes a comprehensive model of integrated systems and biochar, in which the benefits of one system can counteract the impediments of the other: biochar can reduce the volatility of integrated systems while integrated systems can reduce the costliness of biochar. This paper will first discuss the environmental impacts of integrated systems and biochar before noting how such impacts are affected in the comprehensive model. The next section will similarly discuss economic impacts in the same manner, and the last section will outline integrated systems policy and the demand for creating biochar policy. This paper offers a holistic review of integrated systems and biochar and encourages further improvements through the combination of both methods.

Introduction

In the past few decades, Brazil has prioritized agricultural profit over environmental preservation. The country became one of the largest food producers in the world, standing as the biggest producer of cattle (Zia, 2019) and the second-largest producer of soybeans (Figueiredo, 2016). Brazil's agricultural sector now makes up 43% of its economy (Carauta et al., 2018). However, this economic success was achieved at the expense of the environment. Booming agribusiness has caused extensive soil degradation, estimated to be 140 million hectares in total and 36 million hectares of pasture land (Klink and Machado, 2005). Degraded soil lowers the efficiency of terrestrial carbon pools, leading to minimal carbon sequestration and excessive greenhouse gas emissions (GHG) (Maia et al., 2008). Such degradation dims the future in the fight against climate change, as it may prevent Brazil from achieving its UNFCCC pledge to reduce 37% of total GHGs by 2025, which was declared at COP26 (Federative Republic of Brazil, 2022). In addition to environmental damage, soil degradation leads to economic loss; households must expand their plots to compensate for reduced soil efficiency. Some livestock ranches operate at stocking rates as low as 0.5 animals per hectare (Gil et al., 2016), which is drastically lower than the global average of 2.6 animals per hectare (Sandhage-Hofmann, 2023). In turn, agricultural land expansion reduces Brazil's rich native vegetation, which houses over 12% of the world's species (Piao et al., 2021). Current practices of the agricultural sector are unsustainable because degraded soil will uproot a series of processes key to the environment and economy, such as soil carbon sequestration, agricultural efficiency, and the maintenance of native vegetation. It is necessary to implement farming methods that simultaneously protect soils and build agri-economic growth. This paper reviews the environmental, economic, and policy impacts of three sustainable farming methods: Integrated crop-livestock systems (ICL), integrated crop-livestock-forestry systems (ICLF), and biochar, as summarized in Table 1.

Environmental Benefits

Integrated systems rehabilitate degraded soil by maintaining crop residue, while biochar acts as a soil amendment through the effects of recalcitrant carbon. Integrated systems are implemented in the form of ICL, which consolidates a cropping and livestock system into a single, multipurpose operation, as well as ICLF, which incorporates forestry alongside cropping and livestock components. While farmers utilize countless variations of ICL and ICLF, what chiefly defines integrated systems is the novel interaction of cropping, livestock, forestry components, and their collective impact on soil (Pezzopane et al, 2017). Factors of carbon sequestration and soil health will first be discussed concerning integrated systems, before shifting these factors concerning biochar. The improvements made by biochar will serve to demonstrate the plausibility of a comprehensive model of integrated systems and biochar, in which the benefits of biochar can improve the limitations of integrated systems.

	ICL: integrated crop-livestock system	ICLF: integrated crop-livestock-forestry system	Biochar
Definition	Intercropping of forage plants, crops, and livestock.	Intercropping of forage plants, crops, livestock, and forestry.	Soil amendment made by burning agricultural waste in a low-oxygen environment.
Environmental impacts	Improves soil health and carbon sequestration, but can be difficult to manage.	Similar to ICL, but includes heightened potential for both carbon sequestration and mismanagement.	Improves soil health and long-term carbon sequestration.
Economic impacts	Increases crop yield, improves livestock quality, and inherently provides crop insurance.	Similar to ICL, but further increases animal stocking rates	High financial and labor costs.
Policy impacts	Incorporated into the ABC Plan, which supported the adoption of ICL through credit lines, but was limited by a lack of technical knowledge for application.	Likewise to ICL.	Lacks governmental support for mainstream adoption.

Table 1. Definition and Summary of Each Method and their Respective Impacts

ICL

Increased crop residue and the practice of no-tillage are factors of ICL that increase the soil carbon sink. ICL increases crop residue by diversifying crops, and their accordingly diverse spatial and temporal characteristics. The cropping component consists of grain, cereals, and legumes, while the livestock component uses perennial forage crops, and cattle or sheep for livestock (Carvalho et al., 2010). These two systems can be rotated every two to four years, every summer and winter, or intercropped (Brewer and Gaudin, 2020; Alves et al., 2019). While the range in rotation length, crop composition, and layout of intercropping encompasses countless variations of ICL, the practice of no-tillage is a common denominator. No-tillage, a method in which soil is not tilled before planting, improves soil by lowering rates of erosion, leaving crop residue to decompose slowly (Duyck and Petit, 2016), and extending the period in which carbon remains in the soil. No-tillage and crop diversity lead to effective sequestration largely by increasing soil organic matter (SOM), particularly soil organic carbon, which is 58% of SOM (Lal, 2004; Post and Kwon, 2000). Carbon then remains within the soil for longer when compared to conventional systems. Greater carbon pools in ICL are highlighted by Carvalho et al. (2010) conducted from 1999 to 2007, in which a rate of 1.16 megagrams per hectare per year of carbon stocks was reported. The increase was recorded as total organic carbon (TOC) instead of as a carbon particulate fraction, making the reported rate unusually high, especially for a period lasting less than 10 years (Carvalho et al., 2010). Salton et al. (2013) support this finding in their comparison of ICL and conventional tillage (CT) among other systems; TOC was measured at approximately 22.49 g/kg for ICL, and approximately 15.89 g/kg for CT over the course of 17 years. ICL expands soil carbon sink capacity in a relatively short period, helping to capture atmospheric carbon and reduce GHG emissions.

Additionally, ICL improves soil health by increasing SOM, CEC (cation exchange capacity), microbial activity, and

organic phosphorus. SOM, a collection of organic content such as C, K, Ca, N, and Mg (Alves et al., 2019), improved in the aforementioned study by Salton et al. (2013), which compared ICL and CT. Calculated through SOM lability, or the fraction of soil in which carbon levels are most volatile (Benbi et al., 2015), SOM was approximately 12.12% in ICL, as compared to 9.22% in CT (Salton et al., 2013). In terms of CEC, which retains cations for plant absorption and stabilizes soil pH (Alves et al., 2019), ICL continued to show greater benefits. Salton et al. (2013) highlight increased CEC in ICL at approximately 14.72 centimole positive charge per dm^3, as compared to 12.820.18 gulcentimole positive charge per dm^3 in CT. Microbial activity follows suit, as basal respiration was 24.2 carbon converted to carbon dioxide per gram (C-CO2/g) of soil per day for ICL and 14.1 C-CO2/g of soil per day for CT. No tillage within ICL is largely responsible for this increased microbial activity because it reduces soil disturbances. Lastly, organic phosphorus, which is fundamental for root growth via plant cell division (Gul and Whalen, 2016), was reported to be higher in ICL. Organic P in ICL was 31.32.05 mg/kg as compared to 26.45.03 mg/kg in CT (Salton et al., 2013), and this is likely a result of the presence of livestock (Alves et al., 2019). Through greater crop residue and no-tillage, ICL improves both sequestration potential and soil fertility.

ICLF

While ICL demonstrates remarkable soil improvements, ICLF can sequester more carbon than ICL because it holds a closer resemblance to forests, which retain more soil carbon than pasture land. Crops lack the deep rooting capacity of trees, which helps stimulate greater levels of microbial activity and provide recalcitrant carbon that slows carbon decomposition (Abril, 2013). Eucalyptus is most commonly used for the forestry component, as it matures quickly and accumulates a substantial amount of carbon (Behera et al., 2020). Results of increased carbon were highlighted in a study by Conceição et al. (2017), which compared ICLF, ICL, and a eucalyptus plantation. Though both ICL and ICLF were reported to have more soil carbon relative to the eucalyptus plantation, the increase in ICLF was far more drastic. Soil carbon increased by 7.8% in ICLF after three years. On the other hand, ICL increased only by 0.6% (Conceição et al., 2017). Furthermore, Barsotti et al. (2020) found greater carbon storage in ICLF, having measured carbon fixation across a conventional pasture and two ICLF systems. Carbon fixation is similar to carbon sequestration as it measures organic carbon, though only in relation to inorganic carbon and not atmospheric carbon. One ICLF plot was set at a high density of 357 trees per hectare, and the other at a low density of 227 trees per hectare. Carbon fixation of high-density ICLF was 20.09 tons of carbon per hectare, while the low-density ICLF was 11.07 tons of carbon per hectare (Barsotti et al., 2020).

However, such improvements in soil carbon pool capacity must be taken with caution as research involving SOM can be contradicting. Bieluczyk et al. (2020) found that ICLF led to no additional SOM improvement when compared to ICL. The presence of eucalyptus trees likely caused competition for nutrients, evident in the reduction of grass biomass and root volume when compared to the same plot two years prior. Although there is substantial research noting the positive impacts of ICLF, it is necessary to definitively conclude the greater carbon sequestration of ICLF.

Biochar

Biochar was inspired by Amazonian Dark Earth (DE), a soil created by pre-Hispanic indigenous civilizations containing high levels of organic matter, which often came from charred, woody biomass (Leach et al., 2020). Biochar reaches similarly high levels of organic matter from burning organic waste, such as forage, crop, and agroforestry residue, in a low-oxygen environment known as anaerobic pyrolysis (Qambrani et al., 2017). Typically added to soils as an amendment, biochar effectively improves carbon sequestration and the health of particularly poor soil.

As charred organic matter, biochar takes much longer to decompose when compared to uncharred organic matter (Cheng et al., 2008). 97% of the carbon in biochar is recalcitrant, a form of carbon that is up to five times more stable than labile soil carbon (Gross et al., 2021). Recalcitrant carbon, or black carbon, has a strong affinity for aromatic compounds, which are particularly resistant to microbial decomposition (Qambrani et al., 2017). Biochar then establishes efficient sequestration, evident in a study by Lefebvre et al. (2020) that compared increments of biochar application (100%, 50%, 25%) across sugarcane plots; the biochar was created from bagasse, a type of organic waste from sugarcane production. The plot applied with 100% of the available biochar sequestered the most carbon, as its sequestration rate was 13.5 Mt of C per hectare per year[1], while the sequestration rate for the plot with 25% biochar was only 6.75 Mt of C per hectare per year. Biochar unmistakably increases carbon sequestration potential; this is further supported by a number of studies (Pandit et al., 2017; Rittl et al., 2015; Major et al., 2005).

Similarly to integrated systems, biochar provides improvements in organic phosphorus, pH, aluminum saturation, and SOM. Major et al. (2005) report higher P and pH levels as well as lower Al saturation in a study comparing DE with oxisols and ultisols. Results from this study are

comparable to biochar because DE demonstrates similar effects on soil, and Latossolos exemplify a typical farm soil that is nutrient-poor and has an acidic pH. Biochar's affinity for phosphate groups at the molecular level increases organic P (Zhao et al., 2022), while pH levels improve due to a negative charge that exists on biochar's surface, which prevents acidic soil from developing (International Biochar Initiative, n.d.). Additionally, biochar lowers Al saturation by attracting non-polar compounds, which absorb chemicals detrimental to soil fertility, such as Al (Qambrani et al., 2017). In terms of SOM, Bruun and El-Zehery (2012) found slower rates of SOM mineralization with biochar; decreased mineralization rates translate to slower decomposition and an extended retainment of organic matter. They compared two plots of soil covered in straw residue: one with biochar and one without. Biochar applied at 15.5 g/kg reduced SOM mineralization to 5.7% of 20 g of soil, whereas it was 6.6% in the plot without biochar (Bruun and El-Zehery, 2012). Biochar's inherent chemical properties positively impact soil characteristics in a similar manner to integrated systems, creating yet another viable option for rehabilitating soil health.

Biochar and integrated systems

The addition of biochar in integrated systems can provide extended sequestration rates and strengthen soil resilience. When compared to soil organic carbon in integrated systems, biochar carbon has an exponentially longer residence time, or the period in which carbon is present in soil. The average residence time of recalcitrant biochar carbon pools is 556 years (Latawiec et al., 2019), and through radiocarbon dating, has even been shown to remain in soil for up to 10,000 years (Leach et al., 2010). On the other hand, integrated systems often have TOC residence rates of 10 to 20 years (Assmann et al., 2014; Brewer et al., 2023; Latawiec et al., 2019). Furthermore, a substantial proportion of soil carbon in integrated systems is stored in the labile fraction, in which the average residence time is 108 days (Salton et al., 2013). Additionally, ambiguity regarding sequestration length in integrated systems arises due to gaps in research (de Moraes et al., 2013; Carvalho et al., 2010; Vinholis et al., 2020); such ambiguity creates an opportunity for biochar to mend these types of setbacks. Biochar's extensive sequestration is a core strength that can compensate for integrated systems' sequestration rates, which are significantly shorter than biochar when mentioned by studies, but largely remain inconclusive. The combination of biochar and integrated systems creates an even more appealing framework for policymakers to adopt and ultimately can secure long-term carbon targets through biochar's extensive sequestration rates.

Biochar can also stabilize soil bulk density within integrated systems. Similarly to other soil characteristics in integrated systems, bulk density is inherently volatile because of the contrasting components of livestock, crop, and forestry (de Moraes et al., 2014). Mismanagement of integrated systems, particularly overgrazing, easily increases soil bulk density due to extended pressures on soil from livestock weight. However, low soil bulk density is critical for healthy soil as it promotes water retention, porosity, and SOM retainment (Blanco-Canqui, 2017). Biochar can provide low soil bulk density and counteract the risk of increased soil compaction from overgrazing. Biochar naturally has a lower bulk density than soil; biochar's average bulk density is 0.6 g/cm^3, while clayey and sandy soils are about 1.1 g/cm^3 and 1.5 g/cm^3 respectively, both of which are characteristics of typical farm, nutrient-poor soil (Fontana et al., 2023). The effect of biochar on bulk density is evident in a study by Carvalho et al. (2020), in which biochar was applied to Latossolos at increasing rates of 0 megagrams per hectare, 6.25 megagrams per hectare, 12.5 megagrams per hectare, and 25 megagrams per hectare. Results highlighted that biochar applied at 25 megagrams per hectare successfully decreased bulk density by 63% when compared to the control group of 0 megagrams per hectare (Carvalho et al., 2020). Biochar can stabilize the sensitivity of soil by maintaining low bulk density, as it can be difficult to achieve optimal stocking rates for healthy soil in integrated systems. The inherent properties of biochar fittingly compensate for the inherent volatility of integrated systems; the combination of both methods is arguably more desirable than its parts.

Environmental Setbacks

Despite the large steps taken in integrated systems and biochar research, limitations that cannot be resolved with a comprehensive model continue to persist. Setbacks in integrated systems are rooted in the unique requirements of the cropping, livestock, and forestry components, which make integrated systems highly sensitive to agricultural mismanagement. Meanwhile, biochar has potential harmful effects when applied to neutral or alkaline soil, which, therefore, limits its application to acidic soil.

Integrated systems

While biochar can reduce the likelihood of poor soil bulk density observed in integrated systems, decreased crop residue still persists as a symptom of poor grazing control. Ribeiro et al. (2020) highlight this finding in a study comparing light, moderate, and heavy grazing intensities, set at pasture heights of 10 cm, 20 cm, and 30 cm. Moderate grazing had the highest carbon sequestration rate at an average of 4.92 megagrams CO2 equivalents per hectare per year after 3.5 years, while light and heavy grazing intensities had average

rates of 1.84 Mg CO2 eq. per hectare per year. As reduced crop residue is a result of both light and intense grazing, it is incredibly difficult for integrated systems to find the optimal level of moderate grazing. Without this information, suboptimal results lead households to falsely believe that integrated systems are ineffective (de Moraes et al., 2014).

Pertaining to ICLF, cramped tree spacing decreases crop yield through excessive shading, which reduces sunlight. Pezzopane et al. (2017) measured PAR (photosynthetically active radiation) across an ICL plot and four ICLF plots, which had an incremental forestry-crop spacing of 1.5 m, 3.75 m, 7.5 m, and 11.25 m. ICL served as a baseline of 100%. For the crop component, ICLF-1.5 m demonstrated only 39.7% as much sunlight as ICL, while ICLF-3.75 m demonstrated 89.5%. For the pasture component, ICLF-1.5 m had 35.1% sunlight, in comparison to ICLF-11.25 m, which had 79.4%. Lower PAR becomes significant in crop output; the dry matter yield of Piatã grass, a type of pasture grass, was 2226.2 kg per hectare for ICLF-1.5 m, while dry matter yield for ICLF-7.5 m was 3707.1 kg per hectare (Pezzopane et al., 2017). Most of the dry matter is distributed among the three plots of 3.75 m, 7.5 m, and 11.25 m, while ICLF-1.5 m consistently has a lower dry matter yield. Similarly, tree spacing exemplifies another delicate factor that can reduce crop yield. ICLF can have trouble succeeding due to its highly specific requirements, requiring attentive planning and knowledge that may lead to reluctance in the adoption of integrated systems.

Research into integrated systems tends to lack in-depth information needed for practical application at the household level. Current research tends to repeat crop type and region, limiting conclusions to be applicable for highly specific circumstances. ICLF research overemphasizes eucalyptus as the forestry component, leaving the impact of other trees unknown. While trees native to a region could be especially attractive for increasing biodiversity, their characteristics are yet to be studied. Similarly, research in ICL focuses on the few plant species of oats, perennial ryegrass, and *Brachiaria brizantha*, overlooking the effects of other potential crops (de Moraes et al., 2014). Additionally, much research occurs in regions that are not primarily used for livestock and crops common to integrated systems. Figure 1 indicates the primary land usage of each biome region. As highlighted by the *Farming* and *Agriculture mosaic* land covers in Figure 1, most agricultural activity occurs in the lower half of Brazil; however, the majority of experiments are conducted in the Amazon and Cerrado regions (de Moraes et al., 2013).

The diverse climate and geography of Brazil make research in these regions much less applicable for households operating

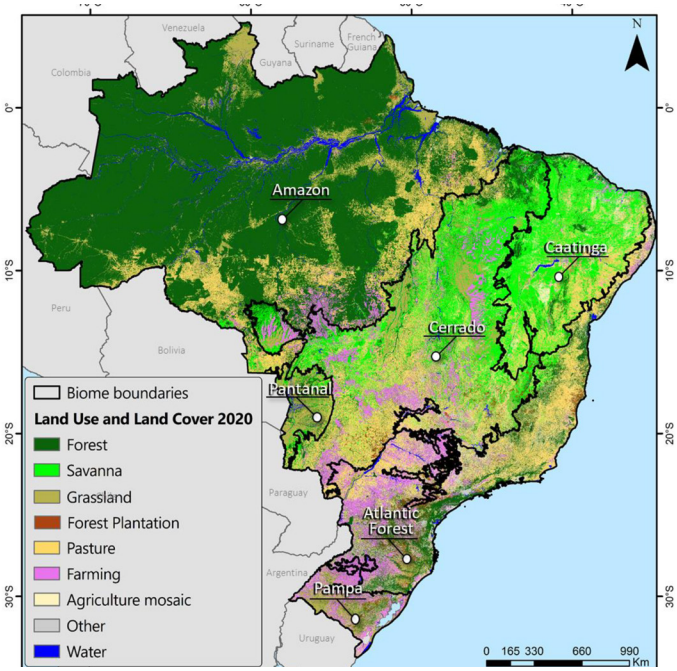

Figure 1. Map portraying primary land usage in Brazil's biomes (Alencar et al., 2022)

elsewhere. Soil weathering, flooding patterns, and clay content are a few of the factors that vary regionally, yet highly affect agriculture (Fontana et al., 2023; Padmanabhan et al., 2023; Holzman and Rivas, 2016). Lastly, there is likely overlooked research potential into the individual components of integrated systems as opposed to the interaction between such components (de Moraes et al., 2014). Much attention is channeled into the singular factor of cropping, rarely discussing livestock. Detailed research entailing proper planning of integrated systems is needed to avoid ineffective circumstances, such as cramped tree spacing and overgrazing, as well as the provision of accessible, location-specific knowledge for household application.

Biochar

The positive effects of biochar are limited when applied to non-acidic soil. The aforementioned Lefebvre et al. (2020), in which biochar application was conducted using either 100%, 50%, or 25% of all onsite biochar, the study highlights this effect in sugarcane plots. These proportions were replicated three times to also vary priming levels of 0%, 21%, and 91% (Zimmerman and Ouyang, 2019). Priming is the process of applying fresh organic matter to stimulate carbon decomposition and establishes an average pH of 6.5–7, when soil is less acidic and nutrient-poor (Liu et al., 2020; Wang et al., 2016). Figure 2 highlights that at all percentages of biochar application, biochar's sequestration ability decreased for the priming level of 91%, and was 13.9–25.3% lower than the plot with 0% priming.

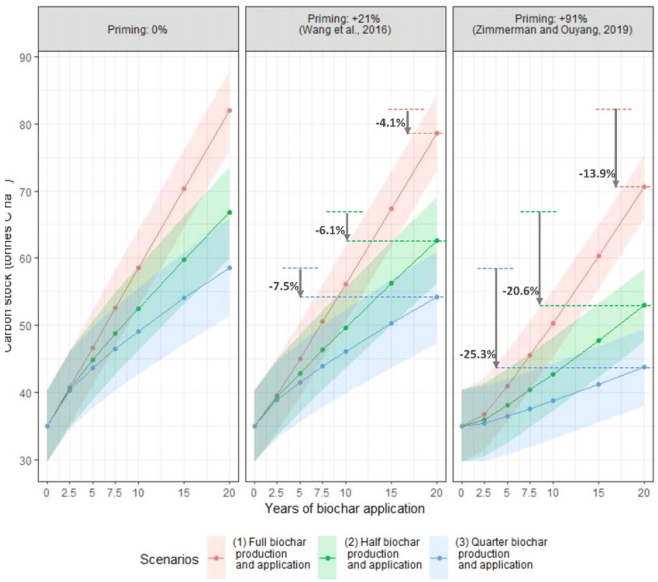

Figure 2. This graph highlights the decreases in sequestration at increasing levels of priming (Lefebvre et al., 2020)

When soil is already within a desired pH range, such as through priming, biochar becomes less effective; it is only helpful for acidic soil since it tends to increase the soil pH (Zhang et al., 2019). Soil pH greatly impacts the resulting carbon sequestration and overall GHG reduction, making it critical to fully comprehend the characteristics of the soil prior to biochar application.

Economic Impact

Integrated systems are profitable compared to both conventional farming systems and isolated biochar applications. These economic provisions would therefore be useful in a comprehensive model of biochar and integrated systems by compensating for the minimal profit of isolated biochar application.

Integrated systems

ICL increases livestock quantity, widens profit margins, and provides market insurance. Increased livestock quality is a result of healthy forage crops, which come from enhanced soil fertility. Carvalho et al. (2007) demonstrated this by comparing carcass weight gain in ICL against a continuous grazing system. Livestock in ICL showed an average weight gain of 540 kg per hectare, while continuous grazing showed an average weight gain of 439 kg per hectare. ICL then offers households additional income via increased carcass weight. ICL also widens profit margins by increasing revenue and decreasing cost. Higher crop yield secures more revenue, as exemplified by Salton et al. (2013), which recorded soybean yields under optimal and poor rainfall in two systems, ICL and a conventional system (CS). ICL produced an average of 3544 kg per hectare and 2882 kg per hectare in optimal and poor rainfall, respectively. CS produced an average of 2984 kg per hectare and 1642 kg per hectare, respectively (Salton et al., 2013). ICL not only produces more but is more resilient as it still outproduces CS under poor rainfall. Greater crop yield is further supported by Figure 3, which graphs twenty-three different studies to contrast grain yield between ICL and conventional systems. The 23 ICL experiments are represented by the various shapes, though maize is depicted in a graph separate from soybean, bean, and wheat. The dotted line strictly represents crop systems in which soil is ungrazed. In addition to increasing revenue, ICL lowers costs by using less external fertilizer, as soils already have nutrients from crop residue. Lastly, ICL's crop diversification creates a financial cushion against market price fluctuations, a risk insurance that monocropping systems do not have. This is particularly useful against frequent summer crop failures and low winter prices, especially pertaining to grain (Carvalho et al., 2010).

ICLF has arguably greater profit margins than ICL due to its forestry component, which prompts more efficient stocking rates. Barsotti et al. (2014) compared rates in conventional pasture, low-forestry ICLF, and high-forestry ICLF. The average stocking rate for conventional pasture was 0.9 Animal Units per hectare, while the average stocking rate for ICLF at low density was 1.7 Animal Units per hectare, and 1.8 Animal Units per hectare at high density (Barsotti et al., 2014). ICLF maximizes stocking rates efficiency and profit margins accordingly without sacrificing soil health. Environmental benefits of integrated systems are economically rewarding by creating sustainable returns on profit.

Biochar

Like integrated systems, biochar increases crop yield by improving soil fertility. However, it does not often lead to similar profitability, as revealed by research on biochar's financial and labor costs. In a study by Latawiec et al. (2019) concerning *Brachiaria* and *Panicum* forage grasses, the recorded cost of biochar application was $6,410 USD, while the cost of standard fertilizer application was $893. Priced at more than six times the amount of fertilizer, it is financially illogical for households to use biochar. Additionally, 15 megagrams per hectare of biochar was applied in contrast to 0.6825 megagrams per hectare of fertilizer, showing that exponentially more biochar is needed to be effective. Intense demands of biochar increase demands in labor and therefore labor costs. Latawiec et al. (2019) determined that 150 to 583 stoves and 75 to 210 stove operators are required to produce

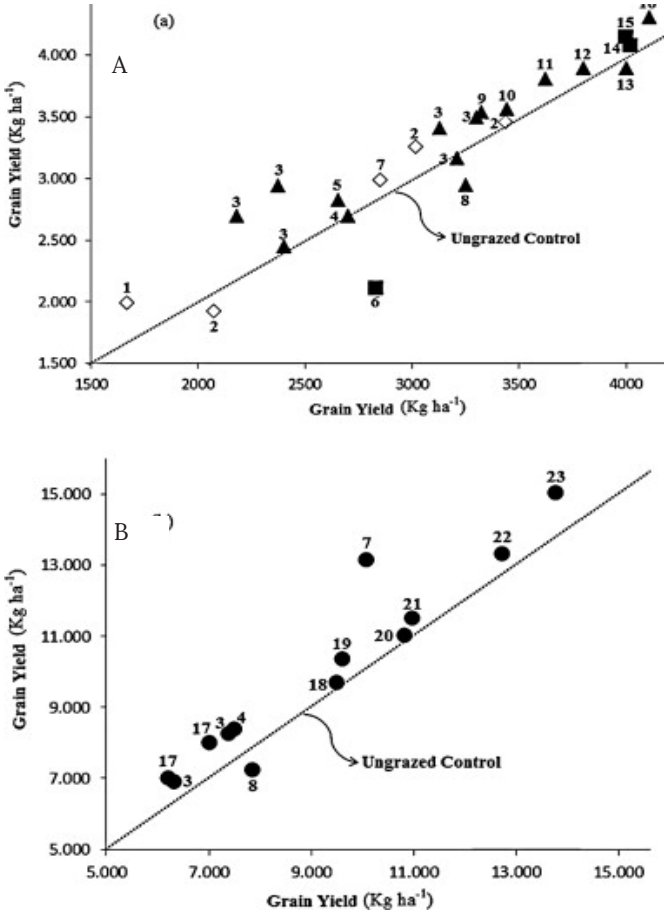

Figure 3. Graph plotting various studies to depict differences in grain yield of ICL and conventional systems (de Moraes et al., 2013)

the minimum effective quantity of 15 megagrams per hectare. The manual labor behind biochar production is immense, making it highly unappealing for small-scale farmers. On the other hand, Pandit et al. (2017) discuss kilns as a replacement for stoves. Being underground conical pits, flame curtain kilns require low cost, labor, and maintenance and also provide a quality of biochar similar to that of stoves. Kilns make biochar more accessible by offering an opportunity for implementation at the small-scale, household level. However, little research has been written on flame curtain kilns, and more research on production costs is needed before biochar can be efficiently used on a large scale.

Biochar and integrated systems

As biochar is a novel method with uncertain production costs, it lacks economic benefits as an independent system. When incorporated with integrated systems, the profits from integrated systems may be able to counterbalance the economic setbacks of biochar. As mentioned by Latawiec et al. (2019), biochar pyrolysis is an expensive process but only when produced for direct sale or direct fertilizer application. Profits would only cover 8–22% of costs unless farmers produced biochar for charcoal instead of fertilizer purposes. Through this method, they could make an additional $30–$85USD per month. This will likely dissuade farmers from using biochar as an amendment, and only as a means for profit through charcoal. However, the application of biochar in integrated systems would allow farmers to make profits sufficient to continue sustainable soil practices. Carauta et al. (2018) measured economic resilience in ICL through a bioeconomic simulation for 10 years. They found that an annual average income of approximately $1300 is associated with the optimal stocking rate of 5.8 Animal Units per hectare(Carauta et al., 2018). At $108 per month, integrated systems can provide greater profits than biochar production for charcoal. Profits from the adoption of integrated systems would only grow from biochar application, considering costs would remain low from biochar's long-term retention of carbon, and would therefore result in SOM and overall soil health improvement. The combination of these two systems creates strong financial incentives that are sustained through environmental benefit, though such conclusions are theoretical and would require practical trials.

Policy Impacts

Integrated systems were nationally adopted through the policy of the ABC Plan. Though it encountered several limitations, its success was substantial enough to set up a framework for the creation of biochar policy, which is currently lacking at the national level.

Integrated systems benefits

The ABC Plan, known as "Agricultura de Baixo Carbono" in Portuguese or Low-Carbon Agricultural Plan, is committed to providing financial, technological, and informational support for nationwide integrated systems adoption from 2010 to 2020 (Carauta et al., 2018). It prioritized GHG mitigation, land rehabilitation, and technician training, among the other goals of waste management and tree planting (Vinholis et al., 2020). The ABC Plan successfully increased the adoption of integrated systems with rural credit and institutional oversight, even exceeding some of its target numbers. Uptake was especially true for ICLF (Carauta et al., 2018), which was lesser-known than ICL before the ABC Plan. However, the success of the ABC Plan was not absolute. The distribution of rural credit and institutional support was severely mismanaged due to a lack of local input, heavily hindering adoption for rural areas. Rural credit encouraged the adoption of integrated systems by removing financial barriers. Rural credit had especially advantageous grace periods and loan terms as well as exceptionally low interest rates, which were

annually set to seven percent lower than the national interest rate from the Central Bank of Brazil (Vinholis et al., 2020; Carauta et al., 2018). Offering cushioned loans recognized and reduced the inherent risk of adopting any new system. Farm Purchase Bonds (CPR) were also implemented, and allowed for crops to be purchased before they were grown, which gave farmers the finances to purchase the necessary equipment (Spolador and Ponchio, 2005). Rural credit proved effective in the agricultural year of 2012–13 when 2800 contracts were signed (Piao et al., 2021), nearly doubling the area of integrated systems in 2013.

Formal networks, consisting of bank and governmental institutions, conducted these credit contracts, acting as a decentralized form of financial subsidization and technical support. Bank of Brazil and BNDES (Brazilian Development Bank) managed contracts through local bank managers, who determined households' eligibility for credit (Carauta et al., 2018). The MAPA (Ministry of Agriculture, Livestock and Food Supply) organized technician programs in which EMBRAPA was responsible for managing technician–farmer relations (Piao et al., 2021). Technical support was dispersed through smaller chains known as rural extension services, while credit lines were accessed through technological reference units (Vinholis et al., 2020). Technical and financial support from formal networks proved to be successful; 6 million hectares of integrated systems were implemented, which was two million hectares more than the targeted four million hectares (Piao et al., 2021; Bragança et al., 2022).

Integrated systems setbacks

Dispersal of such resources among formal networks was unevenly distributed. Access to credit contracts and technical support were largely available only in southern regions. The north and northeast regions made up 4% and 4.5% of total credit contracts respectively, while the south and southeast regions had 46% and 30% each in the agricultural year of 2012–13 (Gurgel et al., 2013). Northern regions are notably more deficient in infrastructure and technology (Piao et al., 2021), and therefore should have received a concentrated investment of resources. This was likely overlooked by the standardized, top-down management. Future policies can learn to recognize the varying needs of each region to provide fair opportunities for credit. Unequal distribution of formal networks was likely due to the lack of attention given to heterogeneous knowledge between and within regions. Each region specializes in different types of farming and requires different types of technicians, bank managers, and overall assistance. For example, southern Brazil has a long history in crop farming, whereas the central-west is more familiar with cattle ranching (Jepson, 2006). When knowledge varies from region to region, formal networks are only partially effective because they cannot address gaps between a region's specific area of expertise and the government's standardized treatment. This plants a hesitancy and unwillingness for an integrated adoption of systems (Hardaker et al., 2015; Gil et al., 2016). However, informal networks can be used to complement formal networks by covering knowledge gaps between the federal and regional levels. Informal networks are built on social capital, which prioritizes mutual trust among households to regulate future relationships (Lyon, 2000), and are often rooted in interactions specific to a community's environment (Bragança et al., 2022). Since formal networks alone cannot adapt to local knowledge, informal networks are necessary for the success of future policies. In regards to research, available data for the ABC Plan remains vague, making improvements for future agricultural policy difficult. While the majority of research speaks highly of credit contracts, its application at the household level is rarely mentioned. Little is known about household responses to credit contracts, despite heterogeneous knowledge and its accordingly varied responses to credit efficiency (Carauta et al., 2018). Even contracts themselves are vague, as qualifications for contracts are limited by the inherently broad, nonspecific definition of integrated systems itself. Such vagueness can cause skepticism about the accuracy of nationwide statistics, as the lack of definitiveness forces highly approximated data of credit uptake (Carauta et al., 2018). Additionally, remarks regarding technical programs were drawn only at the national level, in which articles shared the same disappointed sentiment of short-staffed and unequally distributed technicians (Hochstetler, 2021; de Magalhães and Lima, 2014; Vinholis et al., 2020), but did not address any regional and household perspectives. While household-level data may simply not be available yet, considering the ABC Plan recently ended in 2020, the delay in available data undeniably hinders the success of future policies. Without understanding household-level responses to policy, it will be difficult to establish equitably distributed success.

Biochar

Policy is needed to regulate the growing interest in biochar among corporations, as it is an increasingly attractive asset for biofuel production, particularly as carbon emissions policies grow more restrictive. Corporations may seek to manage a growing number of field sites for industrial biomass production; however, this can put households, particularly small-scale farms, at risk of losing their land, potentially leaving farmers displaced and in poverty — a phenomenon also known as green grabs (Piao et al., 2021). As Brazil's agricultural sector makes up almost half the economy (Leach et al., 2010), its entire economy will likely be negatively

affected if enough farms are repurposed into biochar sites for overseas purposes. The mass economic potential for biochar within Brazil reflects great urgency to protect its farmers from land grabs through policies detailing proper subsidization,

> "Booming agribusiness has caused extensive soil degradation, estimated to be 140 million hectares in total and 36 million hectares of pasture land."

production, and distribution of biochar.

Policy delays are likely due to the inability to transition action from scientific institutions to government institutions. Within the realm of science, biochar has already been credited by UNCCD (United Nations Convention to Combat Desertification) as an effective solution for land degradation, carbon sequestration, and improving soil (Carauta et al., 2018). There are several notable initiatives, such as the IBI (International Biochar Initiative) and Biochar Fund, that offer comprehensive lists of various types of biochar applications. EMBRAPA, one of Brazil's largest government-funded institutions, is also responsible for the growing number of biochar resources, particularly regarding ADE (Amazonian Dark Earth), soil fertility, and climate change mitigation. While state-owned, EMBRAPA has had no involvement in national policy. However, such knowledge remains embedded in science, as the Brazilian government appears more focused on decreasing deforestation than on sequestering soil carbon stocks (Rittl et al., 2015). The government's lack of interest is stark when compared to EMBRAPA, which participated in 15.3% of biochar activity from 2006-2010, while the government participated in 4.2% and only reduced engagement from 2011-2013 (Leach et al., 2010). Such resistance may cause Brazil to fall behind other countries such as Eswatini, Zambia, and Australia, where biochar has already been implemented in agriculture, fuel, and the fight against global warming (Rittl et al., 2015).

The relative success of the ABC Plan can be used as a framework for initiating biochar policy. Through the ABC Plan, integrated systems successfully transitioned from the research and development sector to mainstream adoption largely because of financial aid policies such as rural credit. Carauta et al. (2018) explain that adoption of integrated systems would have only been found among 11% of farmers without the ABC Plan, versus the realized 27%. Additionally, the ABC Plan pushed forth integrated systems even when researchers knew little about certain components, such as crop type and crop-livestock interactions. This logic can apply to biochar: Although doubts exist in the research and development sector regarding biochar performance, demonstrated benefits in soil are arguably sufficient for policy actions to be taken. Prospective biochar policy can also learn from the shortcomings of the ABC Plan. As local, heterogeneous knowledge was not acknowledged, diverse backgrounds can be incorporated into future policy by subsidizing multiple farming methods of both integrated systems and biochar.

Conclusion

Integrated systems and biochar are sustainable alternatives that can replace conventional agricultural practices. Integrated systems manage crop schedules to simultaneously rehabilitate degraded soil and maximize profit, offering environmental protections without having to sacrifice economic gains. Biochar improves soil fertility and reduces agricultural waste, but requires policy initiatives to perpetuate economic gains and protect Brazil's soil at a national level. The comprehensive hypothesis of both systems is worth exploring in future research, as the benefits of one method can compensate for the setbacks of another. Biochar can strengthen integrated systems through long-term sequestration and greater crop yield, while integrated systems can help make the cost of biochar more accessible. It is in the interest of Brazil to continually push forth the agenda of biochar and integrated systems, as the consequences of conventional agricultural methods demand immediate solutions.

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Author Biography

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References

Abril, A. (2013). Labile and recalcitrant carbon in crop residue and soil under no-till practices in central region of Argentina. *The Open Agriculture Journal*, 7(1), 32–39. https://doi.org/10.2174/1874331501307010032

Alencar, A. A., Arruda, V. L. S., da Silva, W. V. , Conciani, D. E., Pereira Costa, D., Crusco, N., Galano Duverger, S., Ferreira, N. C., Franca-Rocha, W., Hasenack, H., Morais Martenexen, L. F., Piontekowski, V. J., Ribeiro, N. V., Reis Rosa, E., Reis Rosa, M., do Santos, S. M. B., Shimbo, J. Z., & Vélez-Martin, E. (2022). Long-term landsat-based monthly burned area dataset for the Brazilian biomes using Deep Learning. *Remote Sensing*, 14(11), 2510. https://doi.org/10.3390/rs14112510

Alves, L. A., Denardin, L. G. D. O., Martins, A. P., Anghinoni, I., Carvalho, P. C. D. F., and Tiecher, T. (2019). Soil acidification and P, K, Ca and Mg budget as affected by sheep grazing and crop rotation in a long-term integrated crop-livestock system in southern Brazil. *Geoderma*, 351, 197–208. https://doi.org/10.1016/j.geoderma.2019.04.036

Assmann, J. M., Anghinoni, I., Posselt Martins, A., Valadão Gigante de Andrade Costa, S. E., Cecagno, D., Carlos, F. S., and de Facio Carvalho, P. C.. (2014). Soil carbon and nitrogen stocks and fractions in a long-term integrated crop–livestock system under no-tillage in southern Brazil. *Agriculture, Ecosystems & Environment*, 190, 52–59. https://doi.org/10.1016/j.agee.2013.12.003

Behera, L., Ray, L.I.P., Nayak, M.R., and Mehta, A. (2020). Carbon sequestration potential of Eucalyptus spp.: A review. *E-Planet*, 18, 79–84. https://e-planet.co.in/images/Publication/vol-18-1/carbon.pdf

Bieluczyk, W., de Cássia Piccolo, M., Pereira, M. G., Tuzzin de Moraes, M., Soltangheisi, A., de Campos Bernardi, A. C., Mazzedo Pezzopane, J.R., Perondi Anchão Oliveira, P., Moreira, M.Z., Barbosa de Camargo, P., dos Santos Dias, C.T., Batista, I., and Cherubin, M. R. (2020). Integrated farming systems influence soil organic matter dynamics in southeastern Brazil. *Geoderma*, 371, 114368. https://doi.org/10.1016/j.geoderma.2020.114368

Blanco-Canqui, H. (2017). Biochar and soil physical properties. *Soil Science Society of America Journal*, 81(4), 687–711. https://doi.org/10.2136/sssaj2017.01.0017

Bragança, A., Newton, P., Cohn, A., Assunção, J., Camboim, C., de Faveri, D., Farinelli, B., Perego, V. M. E., Tavares, M., Resende, J., de Medeiros , S., dence from Brazil's low carbon agriculture plan. *Proceedings of the National Academy of Sciences*, 119(12). https://doi.org/10.1073/pnas.2114913119

Brewer, K. M., and Gaudin, A. C. M. (2020). Potential of crop-livestock integration to enhance carbon sequestration and agroecosystem functioning in semi-arid croplands. *Soil Biology and Biochemistry*, 149, 107936. https://doi.org/10.1016/j.soilbio.2020.107936

Brewer, K. M., Muñoz-Araya, M., Martinez, I., Marshall, K. N., and Gaudin, A. C. (2023). Long-term integrated crop-livestock grazing stimulates soil ecosystem carbon flux, increasing subsoil carbon storage in California perennial agroecosystems. *Geoderma*, 438, 116598. https://doi.org/10.1016/j.geoderma.2023.116598

Bruun, S., and El-Zehery, T. (2012). Biochar effect on the mineralization of soil organic matter. *Pesquisa Agropecuária Brasileira*, 47(5), 665–671. https://doi.org/10.1590/S0100-204X2012000500005

Carauta, M., Latynskiy, E., Mössinger, J., Gil, J., Libera, A., Hampf, A., Monteiro, L., Siebold, M., and Berger, T. (2018). Can preferential credit programs speed up the adoption of low-carbon agricultural systems in Mato Grosso, Brazil? Results from bioeconomic microsimulation. *Regional Environmental Change*, 18(1), 117–128. https://doi.org/10.1007/s10113-017-1104-x

Carvalho, M. L., Tuzzin de Moraes, M., Cerri, C. E. P., and Cherubin, M. R. (2020). Biochar amendment enhances water retention in a tropical sandy soil. *Agriculture*, 10(3), 62. https://doi.org/10.3390/agriculture10030062

Carvalho, P. C. F., Anghinoni, I., Moraes, A. D., Souza, E. D. D., Sulc, R. M., Lang, C. R., Flores, J. P. C., Terra Lopes, M. L., Silva, J. L. S. D., Conte, O., Lima Wesp, C. D., Levien, R., Fontaneli, R. S., and Bayer, C. (2010). Managing grazing animals to achieve nutrient cycling and soil improvement in no-till integrated systems. *Nutrient Cycling in Agroecosystems*, 88(2), 259–273. https://doi.org/10.1007/s10705-010-9360-x

de Faccio Carvalho, P.C., Anghioni, I., de Moraes, A., Damacena de Souza, E., Sulc, R. M., Reisdorfer Lang, C., Cassol Flores, J. C., Lazzarotto Terra Lopez, M., Silva da Silva, J. L., Conte, O., de Lima Wesp, C., Levien, R., Fontaneli, R. S., and Bayer, C. (2007). Manejo de animais em pastejo em sistemas de integração lavoura pecuária. *Proceedings of the international symposium on integrated crop-livestock systems*. https://www.ufrgs.br/agronomia/materiais/manejo%20de%20animais%20em%20pastejo%20em%20sistemas%20de%20integracao%20lavoura-pecuaria.pdf

Cheng, C.H., Lehmann, J., Thies, J. E., and Burton, S. D. (2008). Stability of black carbon in soils across a climatic gradient. *Journal of Geophysical Research: Biogeosciences*, 113(G2). https://doi.org/10.1029/2007JG000642

da Conceição, M. C. G., Matos, E. S., Bidone, E. D., de A. R. Rodrigues, R., and Cordeiro, R. C. (2017). Changes in soil carbon stocks under integrated crop-livestock-forest system in the Brazilian Amazon region. *Agricultural Sciences*, 8(09), 904–913. https://doi.org/10.4236/as.2017.89066

de Magalhães, M. M., and Lima, D. (2014). Low-Carbon Agriculture in Brazil: The Environmental and Trade Impact of Current Farm Policies. *International Centre for Trade and Sustainable Development*, 54. https://seors.unfccc.int/applications/seors/attachments/get_attachment?code=YNX7N72X A7YZ2P27JFC6R64JLKQO0Y9B

de Moraes, A., de Faccio Carvalho, P. C., Campos Lustosa, S., Lang, C., and Deiss, L. (2014.) Research on Integrated Crop-Livestock Systems in Brazil, *Centro de Ciências Agrárias*, 45(5), 1024–1031. https://doi.org/10.1590/S1806-66902014000500018

de Moraes, A., de Faccio Carvalho, P. C., Anghinoni, I., Campos Lustosa, S. B., Valadão Gigante de Andrade Costa, S. E., and Kunrath, T. R. (2013). Integrated crop–livestock systems in the Brazilian subtropics. *European Journal of Agronomy*, 57, 4–9. https://doi.org/10.1016/j.eja.2013.10.004

Duyck, G., and Petit, D. (2016) Seeing is believing: Soil health practices and no-till farming transform landscapes and produce nutritious food. USDA. https://www.usda.gov/media/blog/2016/12/19/seeing-believing-soil-health-practices-and no-till-farming-transform

FAQs. (n.d.). *International Biochar Initiative*. https://biocharinternational.org/about-biochar/faqs/

Federative Republic of Brazil. (2022) Paris Agreement: Nationally Determined Contribution (NDC). UNFCCC. https://unfccc.int/sites/default/files/NDC/2022-06/Updated%20-%20First%20NDC%20-%20%20FINAL%20-%20PDF.pdf

Figueiredo, P. N. (2016). New challenges for public research organisations in agricultural innovation in developing economies: Evidence from Embrapa in Brazil's soybean industry. *The Quarterly Review of Economics and Finance*, 62, 21–32. https://doi.org/10.1016/j.

qref.2016.07.011

Fontana, A., Schaefer, C. E. G. R., Cunha Dos Anjos, L. H. , Ker, J. C., Pereira, M. G., O. Senra, E., & Marques Coelho, R. (2023). Soils from the Atlantic forest. In C. E. G. R. Schaefer (Ed.), *The Soils of Brazil*, 195–220. Springer International Publishing. https://doi.org/10.1007/978-3-031-19949-3_7

Gil, J. D. B., Garrett, R., and Berger, T. (2016). Determinants of crop-livestock integration in Brazil: Evidence from the household and regional levels. *Land Use Policy*, 59, 557–568. https://doi.org/10.1016/j.landusepol.2016.09.022

Gross, A., Bromm, T., and Glaser, B. (2021). Soil organic carbon sequestration after biochar application: A global meta-analysis. *Agronomy*, 11(12), 2474. https://doi.org/10.3390/agronomy11122474

Gul, S., & Whalen, J. K. (2016). Biochemical cycling of nitrogen and phosphorus in biochar-amended soils. *Soil Biology and Biochemistry*, 103, 1–15. https://doi.org/10.1016/j.soilbio.2016.08.001

Gurgel, Â. C., Costa, C. F., and Serigati, F. C. (2013). Agricultura de baixa emissão de carbono: A evolução de um novo paradigma. *Centro de Agronegócio da Escola de Economia de São Paulo*. http://bibliotecadigital.fgv.br:80/dspace/handle/10438/15353

Hardaker, J. B., Lien, G., Anderson, J. R., and Huirne, R. B. (2015). Coping with risk in agriculture: Applied decision analysis. *Cabi Digital Library*. https://doi.org/10.1079/9780851998312.0000

Hochstetler, K. (2021). Climate institutions in Brazil: Three decades of building and dismantling climate capacity, *Environmental Politics*, 30(1), 49–70. https://doi.org/10.1080/09644016.2021.1957614

Holzman, M., and Rivas, R. (2016). Optical/thermal-based techniques for subsurface soil moisture estimation. *Satellite Soil Moisture Retrieval*, 73–89. https://doi.org/10.1016/b978-0-12-803388-3.00004-8

Jepson, W. (2006). Private agricultural colonization on a Brazilian frontier 1970–1980. *J. Hist. Geogr.*, 32(4), 839–863.

Klink, C. A., and Machado, R. B. (2005). Conservation of the Brazilian cerrado. *Conservation Biology*, 19(3), 707–713. https://doi.org/10.1111/j.1523-1739.2005.00702.x

Lal, R. (2004). Soil carbon sequestration to mitigate climate change. *Geoderma*, 123(1–2), 1–22. https://doi.org/10.1016/j.geoderma.2004.01.032

Latawiec, A. E., Strassburg, B. B., Junqueira, A. B., Araujo, E., de Moraes, L. F. D., Pinto, H., … and Hale, S. E. (2019). Biochar amendment improves degraded pasturelands in Brazil: Environmental and cost-benefit analysis. *Scientific Reports*, 9(1). https://doi.org/10.1038/s41598-019-47647-x

Leach, M., Scoones, I., and Stirling, A. (2010). Governing epidemics in an age of complexity: Narratives, politics and pathways to sustainability. *Global Environmental Change*, 20(3), 369–377. https://doi.org/10.1016/j.gloenvcha.2009.11.008

Lefebvre, D., Williams, A., Meersmans, J., Kirk, G. J., Sohi, S., Goglio, P., and Smith, P. (2020). Modeling the potential for soil carbon sequestration using biochar from sugarcane residues in Brazil. *Scientific Reports*, 10(1). https://doi.org/10.1038/s41598-020-76470-y

Liu, X. J. A., Finley, B. K., Mau, R. L., Schwartz, E., Dijkstra, P., Bowker, M. A., and Hungate, B. A. (2020). The soil priming effect: Consistent across ecosystems, elusive mechanisms. *Soil Biology and Biochemistry*, 140, 107617. https://doi.org/10.1016/j.soilbio.2019.107617

Lyon, F. (2000). Trust, networks and norms: The creation of social capital in agricultural economies in Ghana. *World Development*, 28(4), 663–681. https://doi.org/10.1016/S0305-750X(99)00146-1

Maia, S. M. F., Ogle, S. M., Cerri, C. E. P., and Cerri, C. C. (2009). Effect of grassland management on soil carbon sequestration in Rondônia and Mato Grosso states, Brazil. *Geoderma*, 149(1–2), 84–91. https://doi.org/10.1016/j.geoderma.2008.11.023

Major, J., DiTommaso, A., Lehmann, J., and Falcão, N. P. S. (2005). Weed dynamics on Amazonian Dark Earth and adjacent soils of Brazil. *Agriculture, Ecosystems and Environment*, 111(1–4), 1–12. https://doi.org/10.1016/j.agee.2005.04.019

Padmanabhan, E., and Reich, P. F. (2022). World soil map based on soil taxonomy. *Earth Systems and Environmental Sciences*. https://doi.org/10.1016/b978-0-12-822974-3.00118-x

Pandit, N. R., Mulder, J., Hale, S. E., Schmidt, H. P., and Cornelissen, G. (2017). Biochar from "Kon tiki" Flame curtain and other kilns: Effects of nutrient enrichment and kiln type on crop yield and soil chemistry. *PLOS ONE*, 12(4). https://doi.org/10.1371/journal.pone.0176378

Macedo Pezzopane, J. R., Campos Bernardi, A. C., Bosi, C., Anchão Oliveira, P. P., Marconato, M. H., De Faria Pedroso, A., and Esteves, S. N. (2019). Forage productivity and nutritive value during pasture renovation in integrated systems. *Agroforestry Systems*, 93(1), 39–49. https://doi.org/10.1007/s10457-017-0149-7

Souza Piao, R., Silva, V. L., Navarro Del Aguila, I., and De Burgos Jiménez, J. (2021). Green growth and agriculture in brazil. *Sustainability*, 13(3), 1162. https://doi.org/10.3390/su13031162

Pereira Barsotti, M., Bungenstab, D., de Almeida, R. G., and Juergen Schwartz, H. (2014, September 17-19). *An agro-silvo-pastoral production system in Brazil*. Tropentag 2019, Prague, Czech Republic. https://doi.org/10.13140/2.1.4501.8883

Post, W. M., and Kwon, K. C. (2000). Soil carbon sequestration and land-use change: Processes and potential. *Global Change Biology*, 6(3), 317–327. https://doi.org/10.1046/j.1365-2486.2000.00308.x

Qambrani, N. A., Rahman, Md. M., Won, S., Shim, S., and Ra, C. (2017). Biochar properties and eco-friendly applications for climate change mitigation, waste management, and wastewater treatment: A review. *Renewable and Sustainable Energy Reviews*, 79, 255–273. https://doi.org/10.1016/j.rser.2017.05.057

Ribeiro, R.H., Besen, M.R., Piva, J.T., Ibarr, M., and Bayer, C. (2020). Managing grazing intensity to reduce the global warming potential in integrated crop–livestock systems under no-till agriculture. *European Journal of Soil Science*, 71(6). https://doi.org/10.1111/ejss.12904

Rittl, T. F., Arts, B., and Kuyper, T. W. (2015). Biochar: An emerging policy arrangement in Brazil? *Environmental Science & Policy*, 51, 45–55. https://doi.org/10.1016/j.envsci.2015.03.010

Salton, J. C., Mercante, F. M., Tomazi, M., Zanatta, J. A., Concenço, G., Silva, W. M., and Retore, M. (2013). Integrated crop-livestock system in tropical Brazil: Toward a sustainable production system. *Agriculture, Ecosystems & Environment*, 190, 70–79. https://doi.org/10.1016/j.agee.2013.09.023

Sandhage-Hofmann, A. (2023). Rangeland management. In *Encyclopedia of Soils in the Environment* (pp. 88–101). Elsevier. https://doi.org/10.1016/B978-0-12-822974-3.00117-8

Spolador, H. and Ponchio, L. (2005). What is CPR and Its Importance to the Brazilian Agriculture Finance, International Farm Management Association. *ResearchGate*. https://www.researchgate.net/

publication/23512521_What_is_CPR_and_Its_Importance_to_the_Brazilian_Agriculture_Finance

Vinholis, M.M.B., Macchione Saes, M. S., Carrer, M. J., and de Souza Filho, H. M. (2020). The effect of Meso-institutions on adoption of Sustainable Agricultural Technology: A case study of the Brazilian low carbon agriculture plan. *Journal of Cleaner Production*, 280. https://doi.org/10.1016/j.jclepro.2020.124334

Wang, J., Zhengqin, X., and Yakov, K. (2016). Biochar stability in soil: Meta-analysis of decomposition and priming effects. *GCB Bioenergy, 8*(3), 512–23. https://doi.org/10.1111/gcbb.12266

Zhao, D., Qiu, S., Li, M., Luo, Y., Zhang, L., Feng, M., Yuan, M., Zhang, K., and Wang, F. (2022). Modified biochar improves the storage capacity and adsorption affinity of organic phosphorus in soil. *Environmental Research*, 205, 112455. https://doi.org/10.1016/j.envres.2021.112455

Zia, M., Hansen, J., Hjort, K., and Haldes, C. (2019, July 1). *Brazil Once Again Becomes the World's Largest Beef Exporter*. Economic Research Service; USDA. https://www.ers.usda.gov/amber-waves/2019/july/brazil-once-again-becomes-the-world-s-largest-beef-exporter/

Zimmerman, A. R., and Ouyang, L. (2019). Priming of pyrogenic C (Biochar) mineralization by dissolved organic matter and vice versa. *Soil Biology and Biochemistry*, 130, 105–112. https://doi.org/10.1016/j.soilbio.2018.12.011

Credit: Mariana Parilli-Castillo

Black Nationalism and Black Power's Influence on Karamu House

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I'Maya Gibbs

ABSTRACT: This article will explore the impact of the Black Nationalist and Black Power Movement on Karamu House, the oldest Black theater in America. Karamu House, initially established as an integrated settlement house in 1915, later became an influential community theater in Cleveland, Ohio. By examining how an integrated theater shifted into prominently producing radical Black artistry, this article will uncover how Black Nationalism and Black Power changed the leadership, artistry, and goals of Karamu House. Furthermore, studying this shift highlights Black artists' historical utilization of theater as a form of resistance against racial oppression and Karamu House's participation in this artistic protest.

With 108 years since its inception, Karamu House has been recognized as the oldest Black theater in America and an exemplar of integration and Black arts. Karamu, founded in 1915, was a racially integrated settlement house that featured children's dance, music, art, and theater programs. Although Karamu initially fought to advocate coexistence between Black and White people, mid-twentieth-century shifts in racial relations pushed Black artists to change the focus of Karamu. Racial pride, Black identity, and an attention to inequality took precedence over coexistence as the Black Nationalist (BN) and Black Power (BP) Movements influenced the leadership, artistry, and goals of Karamu House.

BN was a Midwest movement rooted in twentieth-century notions of Black separatism from the 1930s to the 1970s, and was later redefined by The Nation of Islam (NOI), a prominent Black Muslim political organization (Blake, 1969, p. 18). The NOI advanced Black Nationalism with tenets of self-determination, racial uplift, and economic and political freedom independent of White people (Blake, 1969, p. 18). Contrastingly, the BP Movement was a zeitgeist catalyzed by the Student Nonviolent Coordinating Committee (SNCC), a significant college-student activist group in the 1960s (Joseph, 2009). The BP Movement was codified and centralized in 1966 by the Black Panther Party (BPP), a West Coast Black militant political organization that promoted Black pride, self-defense, and racial equality (Joseph, 2009). Moreover, both of these movements ignited the Black community across the country and galvanized Black organizations, significantly Karamu House, to actively resist racism.

Early History of Karamu

Before Karamu's radical shift, it was founded on progressive ideals of racial integration. Created by recently married Oberlin graduates Russel and Rowena Jellife, it comes as no surprise that, from its inception, Karamu advocated for integration. Oberlin was the first American college to admit Black students in 1835 (Waite, 2001). The Jelliffes, influenced by their alma mater, reached out to people across socioeconomic, religious, and racial boundaries within their community in inner-city Cleveland. They asserted that integration was integral to the betterment of society (Silver, 1961, p. 25). Therefore, Karamu was founded on principles of equality and integration that would define its legacy.

Continuing to advance its integrationist values, Karamu House innovatively bent casting conventions with colorblind casting. Karamu House was the first theater in the United States to cast regardless of race. During a 1920 children's production of *Fairies*?, rather than casting Black kids as "brownies" and White kids as "fairies", the director swapped both roles in the show (Silver, 1961, p. 55). Karamu's engagement in colorblind shows was groundbreaking, setting a precedent for other theaters and defied segregation in Cleveland. During the early to mid-twentieth century, segregation and racial bias were at their zenith, especially within the city of Cleveland. Moreover, with an increase in Black migrants to the city due to the Great Migration between the 1910s and 1930s, there was a rise in racial tensions between Black and White communities (Phillips, 1996). Thus, Karamu House invited Black and White Clevelanders to perform together, making the theater function as an agent of social change. Altering casting conventions boldly conveyed the message that Black and White people were equal and deserved to share the stage. Further, swapping roles alluded to the idea that race was not a defining characteristic for characters onstage, and by extension, not in society. Pursuing its mission of racial inclusion, Karamu remarkably implemented color-conscious casting within its shows, radically challenging racism and segregation.

Trailblazing with its integration and colorblind casting, theater at Karamu rose in prominence and further cemented the organization. The children's theater program laid the foundation for the Black adult theater troupe—the Dumas Players, later known as the Gilpin Players—in the 1920s (Silver, 1961, p. 65). The Dumas Players was a group of Black actors who, on watching children's theater, believed that they could also contribute to Karamu's mission through the art form (Silver, 1961, p. 64-65). Performing an array of popular morality plays, such as W. H. Smith's *The Drunkard*, Dion Boucicault's *The Octoroon*, and Langston Hughes's *Little Ham*, the troupe introduced to people within the Cleveland community the art of theater (Silver, 1961, p. 492). Combining entertaining plays and a talented troupe of Black actors, Karamu legitimized itself as a communal theater organization, successfully producing over thirty consecutive seasons.

Despite Karamu's success, the theatre received widespread criticism for its depiction of African Americans. Karamu's shows elicited a mixed range of emotions from Clevelanders, but specifically sparked tensions within the Black community. Black leaders and newspapers viewed Karamu's shows as offensive. Regarding shows like Eugene O'Neill's *The Emperor Jones* produced in 1931, which depicted a Black Pullman porter going to the West Indies and becoming an exploitative and raging emperor, Black voices expressed outrage regarding its harmful content. Civil Rights advocate, Ohio state legislator, and editor of *The Cleveland Gazette*, Harry C. Smith expressed "Both of Eugene O'Neill's plays, *The Emperor Jones* and *All God's Chillun Got Wings*, and *Welded*, [sic] were built for the purpose of increasing prejudice against our race" (Silver, 1961, p. 117). In O'Neill's *The Emperor Jones*, the titular Black role was written and performed as an "animalistic" and "wild" beast. Moreover, it harkened to the Black brute stereotype, which was the portrayal of a "dangerous," "savage," and "menacing" African American male. Characterizing a Black man onstage as "bestial" and "brutish" played into racial stereotypes racist views on the "savagery" and "inferiority" of Black men, which angered Black Clevelanders.

> "Karamu House was the first theater in the United States to cast regardless of race."

In addition, the mirroring of minstrel dialects in the dialogue—nineteenth-, twentieth-, and twenty-first-century shows in which White actors presented themselves in Blackface and comically performed offensive racial stereotypes—further elicited discriminatory views of African Americans. Quoting Harry C. Smith's lengthy tirade on the show, "...The value of the plays as artistic efforts, on the part of both author and actors, pales into [sic] insignificance, as far as we are concerned, when the harm their presentation does the race is taken into consideration" (Silver, 1961, p. 117). Therefore, when seeing the negative stereotypical performance of *The Emperor Jones*, many Black Clevelanders felt insulted by the disparaging representation of African Americans. It further limited Black people artistically within the public and relegated them to one detrimental image. Controversy continually arose from Karamu's content, direction, and depiction of Black people. Furthermore, with the continued progression of Black thought and consciousness, the rise of Black freedom movements thirty years later would continue to incite Black protest at Karamu.

> "Karamu's shows elicited a mixed range of emotions from Clevelanders, but specifically sparked tensions within the Black community.."

The Rise of Black Nationalism and Black Power

The later rise of the BN and BP movements in the late 1960s and early 1970s signified a shift in Black consciousness. The BN and BP movements came from and were an extension of the Civil Rights Movement. Many Black Americans, particularly those outside of the South, became disillusioned by the Civil Rights Movement and saw that, despite fighting for equality and integration, their goals would not be fully reached because of the remaining racism and discrimination within schools, housing, and the job market. In particular, despite Title VII of the Civil Rights Act of 1964, which protected employees from racial job discrimination, a majority of Black Americans were still unable to access jobs with higher positions and meaningful wages (Aiken et al, 2013). Additionally, despite the passage of the 1968 Fair Housing Act, which prohibited discrimination in the sale and renting of homes, many Black Americans still found themselves confined to inhospitable low-income housing in segregated and red-lined neighborhoods (Massey, 2015). The lingering inequities within the Black communities on the West Coast and in the Midwest sparked two movements, the BN and BP movements, that were distinct but comparable in goals and values.

The BN Movement was a socio-political movement that focused on Black Americans' social improvement. Prior to the 1960s, BN was advanced by Marcus Garvey, the prolific founder of the United Negro Improvement Association in

1914 (Blake, 1969, p. 18). Garvey's ideas of a united African diaspora, a celebration of Black pride and culture, and Black separatism defined Black nationalism and inspired the larger 1960s movement (Blake, 1969, p. 18-19). Entering the 1960s, the NOI spearheaded Black nationalism and spread its influence throughout America. The NOI unified Black nationalism under its principles of self-determination, morality, and separatism and promoted its message within Black communities and mosques. Most importantly, Black Nationalists believed that separating from White society would advance the Black community economically, politically, and culturally due to the pervasive racism, inequality, and oppression Black Americans endured at the hands of White people. With thousands of Black members of the NOI Black Nationalist movement, Black nationalism exerted a significant influence on Black American psyches during the 1960s and 1970s.

Conversely, the BP Movement was a primarily youth-led West Coast movement officially organized by the BPP (Joseph, 2009). In 1966, the phrase, "we want Black power" was belted by Stokely Carmichael, an influential Civil Rights activist and Chairman of the 1960s college student activist group, the SNCC (Joseph, 2009). The chants for Black power and Black freedom were echoed back through the country; however, the most notable response came from Huey P. Newton and Bobby Seales in Oakland, California. Newton and Seales were Black militant Oakland activists who created the BPP, a Black political organization that advocated for Black people to have the freedom to determine their own future socially, economically, politically, and educationally (Joseph, 2009). The BPP specifically called for social betterment within every aspect of Black lives and outlined the tenets of Black Power within their historic "10 Point Plan," which crystallized the BP Movement. With goals of empowering the Black community, putting an end to Black oppression and inequality, centralizing Black education, and ensuring welfare in the Black community, the call for Black Power encompassed an array of issues that impacted the community.

Black Nationalism and Black Power's Impact on Karamu House

The influence of the BN and BP movements effectively changed Karamu House's leadership. Both movements created a zeitgeist in the 1960s that defined the period as one rooted in Black identity, power, and upliftment. Before the 1960s and for over 50 years, Karamu House was primarily led by all-White leadership organizing Black artists. However, a rise in BN and BP consciousness immensely shaped the theater. The 1965 assassination of BN leader, Malcolm X, sent shockwaves throughout the nation and caused a massive resurgence in Black nationalism. Nationalist beliefs, in particular Malcolm X's belief in Black separatism, began to spread around the country within African-American communities and it encouraged Black militancy in response to racism (Blake, 1969, p. 15). The separation of Black people from White people was championed as a solution to the racism, inequities, and discrimination that Black Americans experienced in White American society.

"With goals of empowering the Black community, putting an end to Black oppression and inequality, centralizing Black education, and ensuring welfare in the Black community, the call for Black Power encompassed an array of issues that impacted the community."

Thus, in 1966, Black Karamu artists responded to these growing Black nationalist beliefs and protested for the removal of White Executive Director Olcutt Sanders, who was previously a high-ranking administrator for the American Friends Service Committee, a global social justice organization (*J. Olcutt Sanders*, 2013). By ousting Sanders, Karamu artists were engaging in Black separatism as a means to improve and develop Karamu as a Black performing arts organization. Moreover, in installing a new Black executive director, J. Newton Hill, the former director of the Lagos Office of African-American Institute, Karamu artists asserted that with a Black leader, Black issues, experiences, and perspectives would better be addressed within Karamu and advance African Americans societally (J. Newton Hill, Aesthetics of African Art lecture, 1968). Therefore, Karamu artists were inspired by the BN Movement and appointed a Black executive director to enact Black separatism.

Karamu's shift in leadership was further motivated by the BP Movement's promotion of Black communal and political agency. The birth of BP and the BPP occurred in 1966, the same year that Karamu artists protested for a new Black leader. Additionally, in 1966 the Hough Riots broke out within a predominantly Black Cleveland community after a Black man was denied entry into a White restaurant (Lapeyrolerie, 2001, p. 5). As a result of heated racial tensions, the Hough Riots signified a frustration with and resistance to the racist treatment of Black Clevelanders. Therefore, these racial tensions within Cleveland produced a Black community

which sought to gain political power and fight against racism; they were thus primed for the BP Movement. The movement's goals to empower Black people to take control of their neighborhoods, economics, education, and social justice resonated within Black communities, especially at Karamu House.

Karamu artists realized that Black leaders needed to be at the helm of the theater to ensure its central focus on Black people, identity, and experiences; thus, in response to the strained racial tensions in Cleveland, Black artists took control of the theater by demanding that a Black man become executive director. Moreover, Karamu artists' attainment of power through a Black figurehead paralleled the BPP's first tenet of Black power, "We want freedom. We want power to determine the destiny of our Black Community" (Newton, 2001, p. 82-83). Having the power to determine what stories are told, how Black people are seen on stage, and leading the theater through a Black director, Karamu artists were enacting principles of Black Power. For the first time in Karamu's history, Black artists elected a new leader and, similar to BP tenets, determined the destiny of Black people at Karamu and in the Cleveland community.

Following the shift in leadership, the BN and BP movements also drastically influenced the shows produced at Karamu House. Before the 1960s, Karamu produced almost entirely White plays written by White playwrights, with only a few detailing Black stories. From 1960-1969 only 11 out of the 55 plays produced focused on Black lived experiences. Karamu's productions of predominantly White shows facilitated colorblind casting because, unlike Black shows, White shows often did not heavily specify cultural or racial identities within their scripts, which allowed White and Black artists to bend these flexible casting requirements. Nevertheless, Karamu identified itself as an influential theater in Cleveland by producing popular theater by notable playwrights such as Tennessee Williams, Edward Albee, Harold Pinter, George Bernard Shaw, Bertolt Brecht, and Samuel Beckett. Karamu's productions of *The Glass Menagerie* (1965), *A Streetcar Named Desire* (1965), *Waiting for Godot* (1962), and *Of Mice and Men* (1961) mostly focused on White experiences and the issues and problems faced by White people. With the exceptions of plays such as *A Raisin in the Sun* (1961) and *Blues for Mr. Charlie* (1966) that mentioned race, few plays delved into Black experiences. However, with the emergence of the BN and BP Movement, Karamu began to transform its artistic direction. The BN and BP movements' zeitgeist aided in the progression of the Black Arts Movement which used the arts as an outlet to promote racial pride, uplift Black culture, and fight against racial oppression.

The leader of the Black Arts Movement, playwright Amiri Baraka, established the movement in response to the assassination of Malcolm X in 1965 and described its purpose as "to create an art, a literature that would fight for black people's liberation with as much intensity as Malcolm X our 'Fire Prophet' and the rest of the enraged masses who took to the streets" (Baraka, 1985). The Black Arts Movement was influenced by BN and BP which caused the Movement to explode and ricochet across America, setting Karamu House ablaze. With the influence of these Black radical ideas in Black arts, Karamu began producing more works that focused on Black experiences. For example, between 1970 and 1973, 18 out of 39 shows produced focused on Black stories, experiences, and issues. With an emphasis on themes of Black struggles, pride, and identity, Karamu brought the BN, BP, and Black Arts Movement into the Cleveland community.

"Karamu artists realized that Black leaders needed to be at the helm of the theater to ensure its central focus on Black people, identity, and experiences."

Following the Black Arts Movement, Karamu produced a variety of Black plays that offered fresh takes on African-American life and explored the joys, sorrows, and essence of Black experiences. Karamu artists were not just implementing BN and BP ideals within their theater but also performing works by Baraka and Ed Bullins that were formed through the lens of BN and BP. The works produced such as Ed Bullin's *Electronic Nigger* (1970), Joseph A. Walker's *The River Niger* (1970), Ted Shine's *Contributions* (1972), Amiri Baraka's *Slave Ship* (1973), and J.E. Franklin's *Black Girl* (1973) were thought-provoking plays calling out Black experiences of racial oppression and inequality. Three of these plays, Shine's *Contributions*, Baraka's *Slave Ship*, and Walker's *The River Niger* exemplify the influence of the BN and BP Movement at Karamu House.

The BN and BP Movement heavily inspired Karamu's depiction of Black militancy and protest within *Contributions*. Ted Shine's creation of the play in 1969 stems from his involvement in the Black Arts Movement; he wrote the play in response to the civil unrest of the 1960s and the anger of some "young Black militants" (1996, p. 831). The play was a product of the Black militant movements in the 1960s, such as the BN and BP Movement, which informed the action and message of the play. *Contributions* dramatizes a Black grandmother, Mrs. Grace Love, and her grandson, Eugene, preparing for

a 1960s protest. The play is embedded with ideas of Black power, freedom, and militancy, which are central BN and BP principles.

> "Following the Black Arts Movement, Karamu produced a variety of Black plays that offered fresh takes on African-American life and explored the joys, sorrows, and essence of Black experiences."

Eugene's activism evinces strong support for Black freedom and mirrors BN and BP sentiments. For instance, Eugene returns home and recounts his protesting efforts, "He walked up to me and said, 'Boy, what do you and them other niggers want here?' 'Freedom, baby!'" (Shine, 1996, p. 838). Eugene's engagement in protest and declaration of wanting freedom showcases an undeniable message for Black people to fight for their freedom within America. Moreover, Black protesters demanding freedom demonstrates the importance of African Americans collectively confronting racism to attain equality. BN and BP sparked Eugene's resistance because these movements encouraged Black freedom and activism against racism. To illustrate, BP's first tenet directly calls for freedom: "We want freedom. We want power to determine the destiny of our Black Community" (Newton, 2001, p. 82-83). BP's call for freedom serves as a powerful tool for African Americans to gain control of their education, economics, and societal treatment. Eugene's call for freedom epitomizes the daring nature, resilience, and vitality of young Black militants and centers Black autonomy as a means to end America's Black racial oppression.

Further, *Contributions* propounds BN and BP beliefs by highlighting Mrs. Love's authentic Black historical experiences. Mrs. Love unveils her racist experiences during Jim Crow, "... Because I'm a tired old Black woman who's been tired, who ain't got no place and never had no place in this country. Don't you think I wanted to have a decent job that would have given me some respect and enough money to feed my family and clothe them decently?" (Shine, 1996, p. 839). Mrs. Love detailing being denied privileges such as getting a "decent job" and receiving "respect" is characteristic of a generation of Black Americans living through Jim Crow. Her inhumane treatment educates audiences on historical Black experiences in the late nineteenth to early twentieth century. Moreover, her experiences are a performance of the BP tenet, "We want education that teaches us our true history and our role in the present day society" (Newton, 2001, p. 82-83). Illuminating Mrs. Love's experiences connects to BP because it reclaims Black historical narratives from dominating White portrayals, empowering Black people to control their own stories. Shine's *Contributions* boldly delineates Black historical experiences as a means to focalize their importance and relevance within modern revolutionary movements.

Correspondingly, Amiri Baraka's 1967 Black radical play, *Slave Ship* also theatrically demonstrates BN and BP ideals. Baraka's involvement in the BP Movement largely influenced his leadership in the 1960s Black Arts Movement and thus overwhelmingly shaped Slave Ship. Baraka retells the African-American experience from their kidnapping to brutal enslavement in the Americas. He depicts the abuse and degrading conditions Africans experienced during the harrowing journey; however, he ingeniously embeds a revolutionary message within the play through an insurrection on a slave plantation. Having slaves denounce and threaten their White master, Baraka (1978, p. 139) strongly employs his characters with a spirit of agency and resistance:

SLAVE 1. Reverend, what we gon' do when the White man come?
SLAVE 2. We gon' cut his fuckin' throat.
SLAVE 3. Devil. Beast. Murderer of women and children. Soulless shit eater!

Baraka reveals an underlying theme of resistance by accentuating the slaves' planning revenge on their master by "cutting his throat" and overthrowing the plantation. He recontextualizes a repressive and dehumanizing setting of a slave plantation as an environment conducive to Black fights against injustice. Through this lens, Baraka's work correlates to the BP and BN sentiment of, "We want freedom. We want power to determine the destiny of our Black Community," because Black slaves are breaking free from the shackles of slavery and gaining their liberty from White oppressors (Newton, 2001, p. 82-83).

Additionally, Baraka specifically incorporates BP and BN values of Black empowerment into *Slave Ship*. The entire cast of actors chant for Black resistance, upliftment, and change:

Rise, Rise, Rise
Cut these ties, Black Man Rise....
How far, how long will it be
When the world belongs to you and me
When we gonna rise up, brother
When we gonna rise above the sun
When we gonna take our place, brother

Like the world had just begun? (Baraka, 1978, p. 143)

Singing for the "Black Man" to rise, Baraka's chant operates as a call to action for Black people to "cut these ties" of racial oppression and "rise above the sun" (Baraka, 1978, p. 143). Voicing when Black people will "rise" coincides with the BP and BN movement calling for Black people to fight against racial discrimination and ascend to a higher level, receiving freedom and equal access to, "land, bread, housing, education, clothing, justice and peace" (Newton, 2001, p. 82-83). Maintaining ownership of Black lives, voices, history, and destinies was integral to the BN and BP Movement, and, therefore, Baraka's lines of "when the world belongs to you and me" promote a tenet of BP in which Black people can control their world. Slave Ship stands out amongst the plays produced at Karamu because it captures the spirit of resistance in such a visceral, innate, and revolutionary way that it effortlessly thrusts audiences into "cutting ties" and jumping into political action.

Furthermore, Joseph A. Walker's *The River Niger* advances BN and BP beliefs. Published and set in 1973, the play centers on a Black working-class family awaiting the return of their son, Jeff, from the Air Force. With Jeff's return home and the introduction of his childhood friend group of Black Panther-esque revolutionaries, the play tackles issues surrounding race, politics, and the American Dream. Returning home, Jeff expresses how he abandoned his coveted role within the Air Force because of the treatment he experienced, which ultimately disappoints his parents. Describing his experiences of having to constantly prove himself to his White counterparts, Jeff details his distaste with the Air Force, "Don't baby me, Mama. I still think I'm the baddest, but I ain't—nor do I want to be a supernigger, 'cause that's all a supernigger is, a *supernigger*. Someone who spends life trying to prove he's as good as the Man." (Walker, 1973, p. 128). Feeling the constant comparison and pressure to "be as good as the Man" in the Air Force, Jeff believes that he competes to ascend to the stature of White men. When Jeff rejects his role as a "supernigger", he is rejecting White supremacy and making Black people rather than White the standard to look up to. Uplifting Black people and the Black identity is a core value within the BP and BN movement. Thus, Jeff's renouncement of being a "supernigger" is a powerful action that directly links to the centrality and primacy of Black people within African American revolutionary movements.

In conjunction, Jeff's Black Panther-esque childhood friends significantly depict and participate in Black radicalism. Jeff's best friend, Mo, is the leader of a Black revolutionary group that practices self-defense tactics and fights against police brutality. He argues for revolution and organizes a violent political plot against police officers; "I'm talking 'bout revolution, man … Black people have been shucking and jivin', passing the buck. Well, we are the buck-ending committee… And in a few days we gonna serve notice on Whitey that the shit has only begun to hit the fan." (Walker, 1973, p. 97). Mo's endeavors to create "revolution" and "serve notice to Whitey" convey a strong revolutionary message for political activism. Moreover, identifying "Whitey," a racial slur for White people, as the receiver of a warning indicates hatred and opposition to White people. Therefore, Mo's calls for revolution are directly aimed at destabilizing White people's political and social structures, which is similar to the BP and BN's goals of decentering White society and breaking its oppressive structure.

Additionally, Mo's idea that Black people have been "passing the buck," but that his organization is the "buck-ending committee" draws upon Black people's exploitation and racism. Black people "shucking and jivin'" and "passing the buck" relate to Black Americans' historical economic exploitation

"Mo's calls for revolution are directly aimed at destabilizing White people's political and social structures, which is similar to the BP and BN's goals of decentering White society and breaking its oppressive structure."

by White society. Building upon this, the phrase "we are the buck ending committee" expresses that Mo's group will end Black people's exploitation, which is a core aim for the BP and BN movements. Further, "we are the buck ending-committee" is also a double entendre for a racial slur. The term "Black Buck" was a demeaning nineteenth–century racial slur used to describe "bestial" Black men who were destructive to White society (Kocić, 2017). Thus, Mo's statement that "we are the buck ending committee" linguistically communicates that his efforts will end White society's racist categorization of Black men as "bucks." *The River Niger*'s depiction of Black revolutionaries emulates and aligns with the radical practices of BP and BN.

Black radical movements' influence on Karamu plays and leadership fundamentally shifted the goals of Karamu House. Rather than continuing to promote racial integration, Karamu's aim solely centered on uplifting and supporting the Black community. For example, Karamu's new Black leader, J. Newton Hill made executive decisions for the organization that were Black-minded and considered the impact programs

and shows would have on the Black community. In addition, the concerted production of Black plays by Black playwrights signified Karamu's artistic focalization of Black experiences. Karamu's change in leadership and production of Black plays expressed new goals for Karamu that no longer highlighted White artistry, but specifically uplifted Black Karamu artists.

> "... the concerted production of Black plays by Black playwrights signified Karamu's artistic focalization of Black experiences."

Conclusion

Consequently, the BN and BP Movement's influence on Karamu House's leadership, plays, and goals provides important insight into the relationship between Black radical movements and Black theater. Karamu's radical shift examines how powerful the BP and BN Movement were in galvanizing Black people and encouraging them to use every platform to resist systems of oppression. Rather than social movements existing solely within political contexts, they also manifested in Black plays and on Black stages. Moreover, Karamu produced politicized theater that called out racism, discrimination, and inequities present within the African-American Cleveland community and throughout America's Black neighborhoods. Thus, Karamu House's radical shift encourages further research specifically within the larger Black Arts Movement to gain an in-depth understanding of the BP and BN Movement's shaping of Black arts.

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I'Maya Gibbs is a Case Western Reserve University senior majoring in Theater and History with a minor in Africana Studies. Originally from New Orleans, Louisiana, I'Maya gained her love of the arts and history from her unique and eclectic upbringing in her hometown. Moreover, inspired by her passion for African American history and theater, I'Maya combines her interests by studying African-Americans' historical use of theater as a form of political protest. Outside of historical research, I'Maya has appeared in over four CWRU Theater Department shows and has studied abroad at the London Academy of Music and Dramatic Art. Furthermore, I'Maya endeavors in her future career to historically highlight overlooked Black artists within the Black Arts Movement and beyond.

References

Aiken, J. R., Salmon, E. D., & Hanges, P. J. (2013). The Origins and Legacy of the Civil Rights Act of 1964. *Journal of Business and Psychology*, 28(4), 383–399. http://www.jstor.org/stable/24709875

Baraka, I. A. (1978). Slave Ship. In Baraka, I. A. (Ed.), *The Motion of History, and other plays* (pp. 129-149). William Morrow and Company, Inc.. (1967)

Baraka, A. (1985). The Wailer. *Callaloo*, 23, 248–256. https://doi.org/10.2307/2930501

Blake, J. H. (1969). Black Nationalism. *The Annals of the American Academy of Political and Social Science*, 382, 15–25. http://www.jstor.org/stable/1037110

Cleveland Museum of Art. (1968, June 20). *Lecture - The Aesthetics of African Art by J. Newton Hill : Cleveland Museum of Art : Free Download, borrow, and streaming*. Internet Archive. https://archive.org/details/cmapr1711/mode/2up.

J. Olcutt Sanders. Square Dancing in the 1800s. (2013, November 14). https://fredfeild.wordpress.com/j-olcutt-sanders/

Joseph, P. E. (2009). The Black Power Movement: A State of the Field. *The Journal of American History*, 96(3), 751–776. http://www.jstor.org/stable/25622477

Kocić, A. (2017). *From the violent "black buck" stereotype to the "Black Hero": Representations of African Americans and black masculinity in American cinema*. Facta Universitatis, Series: Linguistics and Literature. http://casopisi.junis.ni.ac.rs/index.php/FULingLit/article/view/2303

Lapeyrolerie, O. (2015) ""No Water for Niggers": The Hough Riots and the Historiography of the Civil Rights Movement". *Cleveland Memory*. 28. https://engagedscholarship.csuohio.edu/clevmembks/28

Massey D. S. (2015). The Legacy of the 1968 Fair Housing Act. *Sociological forum (Randolph, N.J.)*, 30(Suppl 1), 571–588. https://doi.org/10.1111/socf.12178

Newton, H. P. (2001). *War against the Panthers: A study of repression in America*. Writers and Readers.

Phillips, K. L. (1996). "But It Is a Fine Place to Make Money": Migration and African-American Families in Cleveland, 1915-1929. *Journal of Social History*, 30(2), 393–413. http://www.jstor.org/stable/3789386

Hatch, J. V., and Shine, T. (1996). Contribution. In Hatch, J. V. (Ed.), *Black Theatre USA: Plays by African Americans* (pp. 831–839). Free Press. (1970)

Silver, R. (1961). *A history of the Karamu Theatre of Karamu House, 1915-1960* [Doctoral dissertation, Ohio State University]. OhioLINK Electronic Theses and Dissertations Center. http://rave.ohiolink.edu/etdc/view?acc_num=osu1237655647

Waite, C. L. (2001). The Segregation of Black Students at Oberlin College after Reconstruction. *History of Education Quarterly*, 41(3), 344–364. http://www.jstor.org/stable/369200

Walker, J. A. (1973). *The River Niger*. Samuel French.

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