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ARTISTIC USE OF COMPOSITIONAL VARIATIONS OF WASTE WOOD

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ABSTRACT

This study aims to explore the untapped potential of waste wood materials and investigate how their unique textures, patterns, and forms could be harnessed to create compelling outdoor art installations. As part of a qualitative research methodology, the study employs a case study and iterative design approach to explore the artistic potential and aesthetic value of waste wood in outdoor environments. An extensive collection process was undertaken, gathering various waste wood pieces from furniture shops. These samples were carefully cataloged based on their origin, wood type, dimensions, and distinguishing features. Through an iterative design approach, different arrangement techniques were explored to compose the waste wood fragments into larger sculptural forms that harmonized their irregular shapes and textures. Field studies were conducted to identify suitable outdoor locations where these ephemeral installations could be sensitively integrated while provoking dialogue on themes of temporality, renewal, and mankind's relationship with nature. The research reveals a profound duality within waste wood pieces – their discarded status juxtaposed against the intricate beauty of their details, grains, and organic imperfections. In conclusion, this research shows that waste wood art installation offers new perspectives on material reuse, encouraging a deeper appreciation for the overlooked beauty in discarded objects.

Keywords: Art Installation, Compositional Variations, Exterior Space, Mural, Waste Wood

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INTRODUCTION

The inherent beauty and artistic potential of waste wood often go unnoticed and underappreciated in our mass production and consumption-driven society (Asamoah et al., 2020: 939; Awuni et al., 2023: 80). Discarded pieces of wood, whether offcuts from construction sites or remnants from furniture making, are typically regarded as mere refuse, destined for landfills or incineration (Boakye-Yiadom et al., 2022: 24). However, a closer examination reveals that these castaways harbor a captivating duality – their irregularities and imperfections, borne from natural processes and human intervention, can be compositionally harmonized into evocative mural that sparks contemplation on the ephemeral nature of our existence (Christensen, 2023). The irregular forms, surfaces, and hues of the waste wood pieces serve as the raw material for these compositions, their idiosyncrasies becoming the canvas upon which new perspectives are painted (Besserer et al., 2021: 1752; Monier et al., 2013: 671).

In our modern world, the insatiable demand for construction, furniture, and other wood-based products has led to an alarming rise in wood waste (Eshun et al., 2012: 67). As buildings are demolished, furniture is discarded, and manufacturing processes generate offcuts and scraps, vast quantities of valuable wood end up in landfills or incinerators, contributing to environmental degradation and resource depletion (Jahan et al., 2022: 10478; Maier, 2021: 7638). However, this “waste” wood is far from worthless. Beneath the surface of these discarded pieces lies a treasure trove of unique textures, grains, and patterns – a needlepoint woven by the forces of nature and human intervention. Each fragment carries its own story, etched into its fibers by the passage of time, the marks of tools, and the imprints of the elements (Fahrion, 2024: 1).

Waste wood is a testament to the cyclical nature of our world, where growth and decay are intertwined in an endless dance. These pieces have served their initial purposes, but their journey does not end there (Awuni et al., 2023: 80). Instead, they offer a canvas for creative exploration, a medium through which artists can breathe new life into the discarded and unearth the inherent beauty that lies within (Hans, 2024: 1). The vast diversity of waste wood sources from construction sites to furniture workshop ensures a rich material for the artist to work with. Reclaimed lumber from old barns and buildings carries the patina of age, while offcuts from woodworking shops showcase intricate patterns and unique grain formations (Theos Timber Limited, 2018: 1). Even the humble wood pallet, once a utilitarian workhorse, can become a canvas for artistic expression.

Maier (2021) shared that beyond its aesthetic appeal, embracing waste wood as a creative medium holds profound environmental and social significance. This is done by diverting these materials from landfills and incinerators, the artist's value to these materials reduces the strain on natural resources and minimizes the carbon footprint associated with the production of new wood products. Moreover, the act of transforming waste into art fosters a deeper appreciation for the value of materials and encourages a mindset of conscious consumption and resource stewardship.

In the past few years, the idea of utilizing waste wood has sparked interest and creativity among experts and innovators from various fields. From architects and product designers to artists and environmental scientists, there has been a growing recognition of the immense potential hidden within these discarded materials. Eshun et al. (2012: 67) further discussed that in the realm of architecture and construction, researchers have been exploring the structural and insulative properties of waste wood, paving the way for its incorporation into sustainable building practices. Reclaimed lumber and wood waste have found new life as beautiful and durable flooring, wall paneling, and furniture, imparting a warm and rustic aesthetic to interior spaces (Yang & Zhu, 2021: 6954). Additionally, the development of engineered wood products and wood-plastic composites has opened up new avenues for utilizing waste wood in structural applications while enhancing its durability and strength (Laleicke, 2018: 2182). Lee and Buck (2020) probed that sustainable product designers have embraced waste wood as a canvas for creative expression, upcycling it into functional and aesthetically appealing homeware, furniture, and even jewelry. Through meticulous craftsmanship

and innovative design techniques, these researchers have demonstrated that one person's trash can truly become another's treasure. Life cycle analysis and environmental impact studies have further highlighted the significant benefits of diverting wood waste from landfills and incinerators, fostering a more sustainable and circular approach to material use (Rezania et al., 2023: 2566).

In the field of energy and biofuel production, researchers have explored various methods of converting wood waste into renewable energy sources (Ibitoye et al., 2023: 333; Winandy & Morrell, 2017). From palletization and combustion for heat and power generation to the conversion of wood waste into bioethanol, biomethane, and other biofuels, these initiatives have the potential to reduce our reliance on fossil fuels while also providing a productive outlet for waste wood materials (Lee et al., 2019: 1). Soil remediation and landscaping have also benefited from the exploration of waste wood applications (Iqbal et al., 2020: 1). Wood chips, sawdust, and bark have proven to be valuable mulch and soil conditioners, enhancing soil health and moisture retention. Furthermore, researchers have investigated the use of wood waste in phytoremediation techniques, harnessing its unique properties to aid in the treatment of contaminated soil and water (Rajor et al., 1996: 237). Artistic and creative explorations have been instrumental in revealing the natural charm and adaptability of waste wood (Awuni et al., 2023: 80). Sculptural installations and public art pieces crafted from reclaimed wood have adorned public spaces and fostered a deeper appreciation for the value of materials often deemed worthless. Woodworkers and furniture designers have embraced the unique textures, grains, and patterns of waste wood, creating one-of-a-kind pieces that celebrate the beauty of imperfection (GGI Insights, 2024: 1). Researchers in the field of waste management and logistics have focused on quantifying and characterizing wood waste streams, optimizing collection and sorting methods, and developing integrated waste management systems to ensure the efficient and sustainable utilization of these resources (Taelman et al., 2018: 2184).

Within all these exploitations by varied authors, there is a need for research into developing systematic methodologies for curating, cataloging, and arranging waste wood pieces based on their textures, grains, shapes, and irregularities. This includes exploring techniques for harmoniously juxtaposing the geometric regularities and organic irregularities found within the wood fragments to create compelling compositions that convey deeper narratives about impermanence, cyclicity, and our relationship with nature (McArdle, 2024: 1; Donkor et al., 2021: 184). Again, while there is an understanding of the general effects of environmental factors like sunlight, wind, and moisture on wood, there is a lack of specific guidelines for designing outdoor installations with waste wood that harness these natural processes in a controlled and intentional manner (Eshun et al., 2012: 67; Adhikari & Ozarska, 2018: 1). Research is needed to explore techniques for sensitively integrating these ephemeral artworks into public spaces while ensuring their gradual transformation over time contributes to the overall artistic narrative (Reynolds, 2023: 1). In the limelight, the study, therefore, explores the untapped potential of waste wood materials and investigate how their unique textures, patterns, and forms could be harnessed to create compelling outdoor art installations.

LITERATURE REVIEW

Theoretical Context

The exploration of waste wood as a medium for artistic expression in outdoor space was grounded in two complementary theoretical perspectives that collectively provided an all-inclusive framework for understanding and analyzing this phenomenon.

Ecological Aesthetics and Environmental Art Theory

The study employed ecological aesthetics, as proposed by theorists like Arnold Berleant (b.1932) and Allen Carlson (b.1943), emphasizing the interconnectedness between humans and their environment, and the appreciation of natural and

human-influenced landscapes as works of art (Carlson, 2023: 1; Carlson, 2000; Berleant, 1992). This theoretical lens was particularly relevant when considering the use of waste wood, a material that embodies the intersections between natural processes (growth, decay, weathering) and human interventions (construction, manufacturing, discarding). The outdoor installation created from waste wood was viewed as environmental artworks that foster a deeper connection with nature's cycles and our role within them (Awuni et al., 2023: 80). Through the use of waste wood, the study explored the concept of ecological aesthetics, which emphasized the interconnectedness of art and nature (Munib, 2021: 012102; Emslie, 2015; Levinson, 2005). This integration was done by incorporating natural materials such as waste wood into an artwork. This process was harmonized creating pieces that not only blend seamlessly with the environment but also draw attention to the importance of preserving and protecting our natural resources (Sunassee et al., 2021: 214). Furthermore, the use of waste wood in outdoor art installation is seen through the lens of environmental art theory, which seeks to raise awareness about environmental issues through artistic expression (Down, 2023: 1). This theory hinges on the repurposing waste wood into art as the study drew attention to the impact of human consumption and waste on the environment, prompting viewers to reflect on their habits and consider more sustainable practices. The artistic significance of waste wood in outdoor environment lies in its ability to not only beautify and enhance natural spaces but also to dialogue about our relationship with the environment (Jahan et al., 2022: 10478; Eshun et al., 2012: 67). Through compositional variations and creative interpretations, the study harnessed the power of waste wood to create impactful and thought-provoking works of art that inspire change and promote a deeper connection to the natural world.

Wabi-Sabi and the aesthetics of imperfection

The study again focused on the philosophy of wabi-sabi (Japanese concept), which appreciates the beauty found in imperfection, impermanence, and the natural aging process (Kempton, 2019), that informed the artistic approach to working with waste wood. The unique textures, irregularities, and weathered surfaces of these discarded materials aligned with the wabi-sabi principles of embracing the transient and imperfect nature of existence. The study created compositions that embody the essence of wabi-sabi, inviting viewers to appreciate the poetic depth that lies within imperfection (Carnegie Library of Pittsburgh, 2024: 1). Russell (2018: 1) highlighted that wabi-sabi represents a Japanese aesthetic that finds beauty in the flawed, the fleeting, and the genuine. In the context of waste wood compositions within outdoor environments, embracing the essence of Wabi-Sabi means finding beauty in the natural decay and weathering of wood, rather than striving for perfection or uniformity (Kempton, 2019). By incorporating elements of Wabi-Sabi into the outdoor design, such as using reclaimed or salvaged wood, allowing for natural weathering and patina, and embracing the inherent flaws and irregularities of the material, the study created spaces that feel organic, harmonious, and connected to the natural world. Through the practice of Wabi-Sabi, waste wood compositions in outdoor environments evoke a sense of tranquility, simplicity, and humility, inviting viewers to pause, reflect, and appreciate the beauty of impermanence and imperfection in the world around them. Ultimately, embracing the essence of Wabi-Sabi in outdoor design installation helped this study to cultivate a deeper connection to nature, foster a sense of mindfulness and gratitude, and inspire a more sustainable and harmonious way of living (Gallagher, 2020).

Wood waste

The concept of transforming waste materials into artistic expressions has become increasingly popular lately, fueled by heightened consciousness about environmental sustainability and the need to rethink our approach to resource consumption and waste management (de Souza Pinho et al., 2023: 14944; Greinert et al., 2019: 3083). Within this broader context, the exploration of waste wood as a medium for artistic creation has emerged as a compelling and multifaceted area of inquiry (Debrah et al., 2021: 6). Researchers have delved into the inherent beauty and potential hidden within discarded wood pieces, examining the unique

textures, grains, and patterns that result from the interplay of natural processes and human interventions (Eshun et al., 2012: 67; Pandey, 2022: 1). Terramai (2024) investigated the use of reclaimed wood in sculptural installations, highlighting the ability of these materials to evoke a sense of history and narrative through their weathered surfaces and organic irregularities. Similarly, Maier (2021) and Awuni et al. (2023) explored the artistic potential of wood waste from construction sites, demonstrating how these seemingly mundane materials can be transformed into captivating visual compositions through thoughtful arrangement and juxtaposition.

The artistic expression of waste wood has also been explored within the context of public art and environmental installations. Awuni et al. (2023) documented the creation of a series of artworks using wood waste from various sources, examining the ways in which these artworks foster dialogue about sustainability and our relationship with nature. Their research highlighted the transformative power of these artworks, as viewers were prompted to confront the cyclical nature of growth, decay, and renewal embodied by the gradual weathering of the wood pieces (Akhatov et al., 2017: 246). Beyond the aesthetic and conceptual aspects, researchers have also investigated the practical considerations and challenges associated with working with waste wood in outdoor environments (Hauru et al., 2014: 114). Foliente et al. (2002: 10) conducted a study on the durability and weathering patterns of various wood species and treatments, providing valuable insights for artists and designers seeking to create long-lasting outdoor installations. Additionally, Ramage et al. (2017: 333) explored sustainable sourcing strategies and partnerships with industries and organizations to facilitate a more reliable and consistent supply of waste wood materials for artistic endeavors.

Furthermore, the potential for waste wood art to serve as a catalyst for environmental education and community engagement has been explored by several researchers. Percy-Smith and Carney (2011: 23) documented the implementation of a community art project that involved local residents in the creation of a public installation using reclaimed wood, fostering a sense of ownership and appreciation for sustainable practices. Similarly, Bassey and William (2020: 159) examined the role of educational programs and workshops in promoting the artistic and creative reuse of waste wood, particularly among younger generations. While the existing literature has provided valuable insights into the artistic, environmental, and social dimensions of working with waste wood, there remain several gaps and opportunities for further exploration. One area that warrants additional research is the development of comprehensive methodologies for curating, cataloging, and harmoniously arranging waste wood pieces based on their unique compositional variations (Hill et al., 2022: 9031). Additionally, there is a need for more in-depth studies on the long-term impacts of environmental factors on outdoor waste wood installations, as well as guidelines for sensitively integrating these ephemeral artworks into public spaces while ensuring public safety. The literature on compositional variations of waste wood and its artistic values as a mural in exterior spaces highlights the multidisciplinary nature of this field, drawing upon insights from art, design, sustainability, and community engagement. As society continues to grapple with the challenges of resource consumption and waste management, the exploration of waste wood as a medium for artistic expression deals with a compelling avenue for fostering environmental awareness, promoting sustainable practices, and celebrating the inherent beauty of materials often discarded as worthless (Donkor et al., 2021: 184).

Waste Wood and Exterior Spaces

The interplay between waste wood and exterior spaces holds a profound significance that transcends mere aesthetics. These discarded fragments of wood, imbued with the imprints of time and human intervention, serve as a powerful medium for artistic expression that resonates deeply with the natural environment (Karnani, 2022: 1). Exterior spaces, whether urban or rural, provide a canvas upon which the compositional variations of waste wood can be arranged and displayed. The outdoor setting allows these artworks to engage with the forces of nature, such as sunlight, wind, and precipitation, in a way that is both poetic and transformative (Boeckel, 2014: 801; Berleant, 2005).

The irregularities and textures of waste wood pieces, shaped by their unique histories and origins, take on a new life when juxtaposed against the backdrop of the external environment (Art story, 2024: 1). Each knot, grain pattern, and weathered surface becomes a testament to the cyclical nature of existence, echoing the processes of growth, decay, and renewal that permeate the natural world. Artists create environmental narratives that invite viewers to contemplate their relationship with the surrounding landscapes by arranging these waste wood fragments into thoughtfully composed installations (Refahi, 2023: 1). These installations become murals, reminding us of the impermanence of all things and the importance of cherishing the beauty that exists within the imperfect and discarded (Hester, 2023).

Reynolds (2023: 1), moreover, expressed that the outdoor setting accepts a dynamic interplay between the artwork and its surroundings. As the seasons change and the elements exert their influence, the waste wood installations gradually transform, mirroring the ever-shifting cycles of nature. This ephemeral quality imbues the artworks with a sense of temporal poignancy, encouraging viewers to appreciate the fleeting moments and embrace the constant state of flux that governs our world (Mark-Ng, 2019: 130). Exterior spaces also provide an opportunity for these waste wood installations to become integrated into the composition of public life. Artists foster a deeper connection between individuals and their local environments by strategically placing these artworks in parks, plazas, or other communal areas (Alpak et al., 2019: 15). The installations serve as catalysts for contemplation, prompting passersby to pause and reflect on the inherent beauty and value that can be found within the discarded remnants of our material world.

Furthermore, the outdoor setting allows for a dialogue between the artwork and the surrounding architecture and urban landscapes. Waste wood installations complement or contrast with the built environment, creating visual narratives that explore the intersection of natural and human-made elements, and the ways in which they coexist and influence one another (Maier, 2021: 7638). Ultimately, the symbiotic relationship between waste wood and exterior spaces deals with a powerful avenue for artistic expression, environmental awareness, and personal reflection. Artists create a compelling mural that celebrate the beauty of imperfection, honor the cyclical rhythms of nature, and inspire a deeper appreciation for the inherent value that exists within the seemingly mundane and discarded (Christensen, 2023).

Artists and their Artistic practices with waste materials

Artistic practices with waste materials have gained significant traction in recent years, as artists and creatives explore innovative ways to repurpose and breathe new life into discarded or unwanted wood, metal or plastics (Siriyyum, 2022: 1; Michałowska, 2021: 12). Ahmad et al. (2022: 243) support that this approach not only promotes sustainability and environmental consciousness but also challenges conventional notions of art materials and techniques. One of the key advantages of working with waste material is its abundance and accessibility. Waste materials such as wood and others are sourced from various sources, including construction sites, demolition projects, furniture workshops, and even household renovations. These materials, which would otherwise end up in landfills or contribute to deforestation, are transformed into canvases for artistic expression. Waste material lends itself beautifully to sculptural installations and assemblages, where artists explore the interplay of texture, form, and composition. Artists such as El Anatsui (b.1944, Ghana) (Figure 1), Patrick Tagoe-Turkson (b.1978, Ghana) (Figure 2), Choi Jeong Hwa (b.1961, South Korea) (Figure 3), Robert Bradford (b.1923, Canada) (Figure 4), Nils Udo (b. 1937, Lauf an der Pegnitz, Germany) (Figure 5), Henrique Oliviera (b. 1973, Ourinhos, Brazil) (Figure 6) and others have created visually striking and thought-provoking works that challenge traditional notions of sculpture. These installations often incorporate found objects, discarded materials, and repurposed elements, inviting viewers to re-evaluate their perception of waste and its potential for artistic transformation.

From figurative sculptures to abstract compositions, the tactile nature of waste materials allows these artists to explore the organic beauty of the material

while giving new life to what was once considered waste. In the realm of waste materials, these offer a sustainable and creative alternative to traditional materials. Artists and designers utilize reclaimed waste material to craft functional and aesthetically pleasing pieces, such as tables, chairs, shelves, and decorative objects. Their approaches celebrate the beauty of imperfection and encourage experimentation with unconventional materials. Beyond their aesthetic appeal, these artists' recycled works aim to raise awareness about environmental and social issues. Their artworks serve as powerful statements on overconsumption, waste management, and the importance of repurposing and recycling as indicated in Figures 1-6.

El Anatsui



Figure 1. El Anatsui, Wooden sculptures, 2016, hardwood installation, France

Patrick Tagoe-Turkson

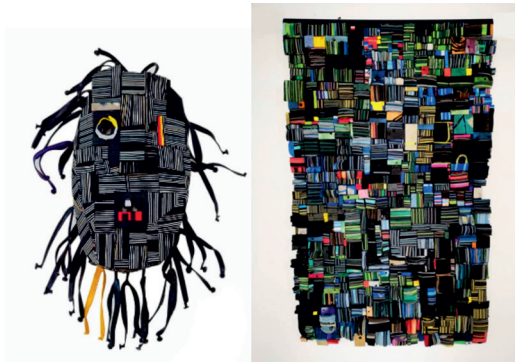


Figure 2. Patrick Tagoe-Turkson, *Akokra (Old Man)*, 30x10x42cm, Strawboard, Fabric and found flip-flops. *Abeka*, 51 x 31cm, Found flip-flops on suede, 2023, USA

Choi Jeong Hwa



Figure 3. Choi Jeong Hwa, *Dandelion*, 2018, 7000 used kitchenware and steel structure, MMCA National Museum of Modern and Contemporary Art, Seoul

Robert Bradford



Figure 4. Robert Bradford, *Recycled toy*, 2004, UK

Nils Udo



Figure 5. Nils Udo, *Rock-Time Man*, 2001, Germany

Henrique Oliveira



Figure 6. Henrique Oliveira, *Corupira*, 2023, Gallery of Modern Art Brisbane, Australia, Photo by C Callistemon

Organization and Wood Waste Reuse for a Sustainable Future

Waste wood is one waste stream that is not only a loss for the economy but also a threat to the environment considering the pollution and resources used in its generation which arises from human activities like construction, demolition, manufacturing and logging (Eshun et al., 2012: 67). Adhikari and Ozarska (2018: 1) further expressed that wood is also a raw material which has great potential for its utility given today's conservation needs and issues surrounding this material. Out of so many issues the most serious includes the disposal of anything made from timber considering the amount of pollution it generates. This is one situation where wood waste can be used to provide solutions to current world issues.

Wood waste can be put into reuse, this is in fact quite cheap and friendly to the earth. The first step in this whole endeavour would be the setup of a proper collection system where wood waste is able to be picked and moved into an appropriate place for partial relocation. Proper picking would ensure that

there is less wastage as resources would be reused instead of destroying non-contaminated resources (Maier, 2021: 7638). For example, untreated wood can be repurposed into timber for creating new materials, as well as for walls, flooring, and even ceilings. Offcuts can single handedly eliminate the need for excessive use of new wood by shifting the focus to greater utilization of pallets for packing. (Takase et al., 2023: 12; Asamoah et al., 2020: 939). Apart from being conditioned to new space, or working as a member of a new environment, wood waste can be sculpted. Sculpting using wood is constantly on the rise with artists and designers creating some of their best pieces from parted wood (Asenso et al., 2020: 83). Governmental and nonprofit organizations in Ghana such as the Ministry of Environment, Science and Technology, the EPA, Ministry of Local Government and Rural Development, Ministry of Health, Samartex Timber & Plywood Company Limited and others have been involved in community programs including workshops by inviting to use waste wood for their projects and contribute for sustainable practices and skills in the locality.

MATERIALS AND METHODS

The geographical location of the study was Effiakuma-new site at the main gate of Takoradi Technical University, Western region of Ghana. This location offered a dynamic and stimulating backdrop for investigating the repurposing of waste wood for artistic and functional purposes within exterior spaces. The location has a unique blend of natural beauty and human habitation that provides a rich context for exploring the interplay between nature, culture, and creativity (Cooper et al., 2021: 557; Mann & Saultz, 2019). Through this thoughtful selection of site-specific artworks, the researchers sought to explore the universal resonance of these waste wood murals, transcending geographical boundaries and inviting audiences from all walks of life to embark on a journey of discovery, appreciation, and environmental awareness (Abbadia, 2022: 1).

The qualitative methodology of the study involved the collection and analysis of non-numerical data to understand the social reality of people. The study employed a case study and iterative design approaches aimed to explore the artistic potential and aesthetic value of waste wood in outdoor environments. This design was a cyclical approach to design that involved repeated rounds of analysis, ideation, prototyping, testing, and refinement (Cennamo & Kalk, 2019: 406). It was a flexible and adaptable process that allowed the researchers to continuously improve and evolve their designs based on feedback and insights gained at each stage. The researchers utilized this method to gather in-depth insights (Rahman, 2016: 102) and understand the subjective experiences and perceptions of individuals interacting with waste wood installations. To conduct the study, the researchers employed various qualitative research methods (Busetto et al., 2020: 1; Collins & Stockton, 2018) such as case study and iterative design approaches, direct interviews and observations, and visual analysis. The iterative approach involved conducting a series of experiments (Al-Yahyai, 2014: 287; Marshall, 2010: 77) and explorations in the artist's studio to understand and uncover the artistic values of waste wood. This method focused on using waste wood as a medium for artistic expression and aimed to highlight its potential and significance in creating meaningful compositions. In this research, researchers went through a variety of academic journals, books, and design case studies to first, understand the concept better, and then follow with a detailed explanation of containing and reusing the wood waste, the unique traits it possesses along with some of its sculptural applications. Case study approach was used to examine applications and installations of waste wood in outdoor environments, providing in-depth insights into its potential as an artistic medium. Through compositional variations, the researchers worked with waste wood to experiment with different arrangements, combinations, and forms to create visually appealing and thought-provoking artwork (Munib, 2021: 012102; Besserer et al., 2021: 1752). These variations included exploring different shapes, sizes, textures, and colors of waste wood pieces, as well as experimenting with gluing techniques and processes of assembling and manipulating them.

Through face-to-face interviews (Martinez-Mesa et al., 2016), the researchers purposively sampled ten (10) expert views from research participants (Campbell et al., 2020) as they engaged with two (2) professional artists, two (2) spatial and furniture designers, three (3) studio assistants and three (3) art lecturers who had experience working with waste wood in artistic projects. These interviews provided valuable firsthand accounts and personal perspectives on the artistic values associated with waste wood in exterior space (Bolderston, 2012: 66). Additionally, the researchers conducted direct observations in outdoor settings where waste wood installations were present. The researchers observed how people interacted with these installations, and were able to gain a deeper understanding of the aesthetic appeal and emotional impact of waste wood in exterior space (Alapieti et al., 2020: 617). This was carefully documented through unobtrusive observations (Moser & Korstjens, 2017: 9), noting the different ways in which audiences engaged with the installation and the overall ambiance created by the compositions of waste wood. Also, the researchers used visual analysis to analyze the studio processes of waste wood artwork by exploring the broader artistic context and identify common techniques, and approaches used in creating compositions with waste wood. This analysis was supported by photographs to the understanding of how waste materials were transformed into meaningful artistic expressions. For ethical considerations (Drolet et al., 2022: 269), the research involved research participants, such as artists, designers, and studio assistants contributing to waste wood installations, obtaining informed consent was essential. Before consenting to take part, participants were thoroughly briefed on the study's aims, methods, potential hazards, and advantages. The consent documents provided detailed explanations of the data collection, storage, and usage processes, and assured participants that they could opt out of the study at any point without any repercussions.

Tools and Materials

Tools and materials were crucial components in executing the art installation (ILO encyclopaedia, 2011: 1). Hand tools such as hammers, saws, and files were employed to perform mechanical operations on the waste wood, ensuring precision and accuracy in shaping the wood. Essential tools included chisels, mallets, tape measures, spirit levels, angle grinders, and die grinders, each serving specific functions in the creation process, from off-cuts wood to shaping and smoothing its surfaces. Material selection played a pivotal role in achieving the desired sculptural outcomes. Waste wood off-cuts such as red and white wood served as the primary material for the art installation, chosen for their unique characteristics and suitability for the intended aesthetic and functional purposes. Additionally, paper, abrasive paper, adhesives and lacquer were utilized to enhance the aesthetics of the finished pieces.

RESULTS AND DISCUSSION

Philosophical agency of waste wood materials

The philosophical agency of waste wood materials and their unique textures, patterns, and forms lies in their ability to challenge our conventional notions of beauty, value, and our relationship with the natural world (Levinson, 2005). The study used these discarded fragments, often deemed worthless and destined for landfills or incinerators, harbor a profound depth and storytelling potential that invites us to reconsider our perception of waste and imperfection. At the core of this philosophical inquiry is the concept of wabi-sabi, which appreciates the beauty found in imperfection, impermanence, and the natural aging process (Russell, 2018: 1). The irregular forms, weathered surfaces, and intricate grain patterns of waste wood pieces embody the very essence of wabi-sabi (Kempton, 2019), inviting us to appreciate the poetic depth that lies within the transient and imperfect nature of existence.

Through the artistic curation and arrangement of these waste wood fragments, this research was confronted with a visual language that challenges conventional notions of symmetry, order, and perfection (Browne et al., 2022: 575). The organic

irregularities and asymmetries present in these materials served as a powerful metaphor for the inherent chaos and unpredictability that permeate the natural world, reminding us of the futility of attempting to impose rigid control over the ever-changing cycles of growth, decay, and renewal. Moreover, the unique textures and patterns found within waste wood carry the indelible markings of their origin stories – the traces of human labor, the imprints of natural forces, and the passage of time itself. The study embraced these narratives and gave voice to the object biographies embedded within each fragment. The public or audience was invited to contemplate the interconnectedness of our existence with the broader needlepoint of life, acknowledging our role as both creators and caretakers of the material world around us (Ngwena, 2018).

The philosophical agency of waste wood materials also extends to the realm of sustainability and our relationship with the natural environment (Bridgens et al., 2018: 145). The study repurposes and elevates these discarded materials into artistic expressions as our environment is confronted with the consequences of our consumption patterns and the need to rethink our approach to resource management (Welsch, 2021). The act of transforming waste into art becomes a powerful statement on the cyclical nature of existence, encouraging us to embrace a more conscientious and regenerative mindset that seeks to close material loops and minimize our ecological footprint. Also, the ephemeral nature of outdoor waste wood installation served as a poignant reminder of the impermanence that governed all aspects of our existence. As these artworks gradually weather and transform under the influence of the elements, they mirror the inexorable processes of growth, decay, and renewal that shape our natural landscapes. In this way, the philosophical agency of waste wood extends beyond the physical realm, inviting us to contemplate our own mortality and the fleeting nature of our presence on this planet (Koval, 2024: 1).

Ultimately, the philosophical agency of waste wood materials and their unique textures, patterns, and forms lies in their ability to provoke contemplation, challenge conventional wisdom, and foster a deeper appreciation for the inherent beauty and wisdom that can be found within the imperfect, the discarded, and the irregular. The study embraced these materials as a canvas for artistic expression and environmental narratives and embarked on a journey of self-discovery, reconnecting with the cyclical rhythms of nature and redefining the understanding of what it means to be stewards of our fragile and ever-changing world.

Africanism

The exploration of waste wood materials and their unique textures, patterns, and forms through the lens of Africanism suggested a rich cultural, philosophical, and artistic perspective. In many African traditions, the natural world and its elements hold deep symbolic and spiritual significance, serving as a conduit for understanding our place within the intricate web of existence (Levinson, 2005). At the heart of this African worldview is a profound reverence for the cyclical rhythms of nature, where growth, decay, and regeneration are celebrated as integral components of the cosmic dance. Waste wood, with its weathered surfaces and organic irregularities, embodies this cyclical essence, bearing the indelible markings of time and the transformative forces of the elements. The unique textures and patterns found within these discarded wood fragments are interpreted as visual narratives, echoing the intricate designs and motifs that adorn traditional African art and craft. From the intricate grain formations to the knots and burls, each imperfection holds the potential to be elevated into a symbolic representation of the interconnectedness of all things – a metaphor for the intertwining of human existence with the natural world (Ngwena, 2018).

Ellen MacArthur Foundation (2023: 1) also argues that the practice of repurposing and transforming waste materials into functional or artistic objects resonates deeply with African principles of resourcefulness and sustainability. In many African cultures, the concept of waste is a foreign notion, as every element of the natural world is regarded as a potential resource to be cherished and utilized with reverence and respect (Ahen & Amankwah-Amoah, 2021: 6646).

The researchers arranged waste wood pieces into outdoor installations with a philosophical agency of these materials, inviting viewers to contemplate the African ethos of harmony with nature. The juxtaposition of geometric regularities and organic irregularities within these compositions is seen as a celebration of the delicate balance between human ingenuity and the unpredictable forces of the natural world (Gyabaah et al., 2023). Moreover, the ephemeral nature of these outdoor installations resonates with the African concept of impermanence and the transitory nature of existence. As the waste wood pieces gradually weather and transform under the influence of the elements, they become living mural, reminding us of the impermanence that governs all aspects of our existence – a poignant reminder to cherish each moment and embrace the cyclical rhythms that permeate our world. Through the lens of Africanism, the unique textures, patterns, and forms of waste wood materials take on a profound symbolic and philosophical agency, inviting us to explore our relationship with the natural world (Lee et al., 2019: 1), celebrate the beauty found within imperfection, and embrace the principles of resourcefulness and sustainability that have been woven into the fabric of African cultural traditions for generations.

Studio-based process of waste wood into outdoor art installation

Pre-studio stage — Design concept and process

The African map as a concept was deduced from the Africanism philosophical agency (Ngwena, 2018). This concept was developed by sketching out the map and circular border layout to guide the construction process. The design was carefully transferred onto the wall with pencil and paper. The design process involved sketching, measuring and selecting waste wood pieces for the art installation. The circular border design was drawn to guide the artists' focus toward the central map. This section needed wall treatment, filling holes on wall surfaces and sanding to make the wall smooth. Paint primer was applied to the wall before the actual paint was applied to the finished wall.

Studio stage — Wood preparation by cutting, shaping and assembling

After securing the wood pieces, the researchers performed any necessary touch-ups. This involved smoothing rough edges, and adjusting alignments of the waste wood pieces. Wood sealant was applied to the waste wood pieces to prevent them from decay and make it smooth for the final finish. The researchers allowed the sealant to dry and sand the wood again with smooth sanding paper for this method. This process was done to help seal any poles and make the wood smooth. One of the researchers applies wood lacquer as the finished solvent. The researchers ensured that the arrangement of waste wood offcuts on the wall at the entrance of TTU (Main campus) was in conformity with the contour of the African map drawn on the wall. The waste wood pieces were arranged in different forms and shapes on the border of the African map. The study utilized redwood and white wood to help the work to stand out. The researchers began to assemble the shaped waste wood offcuts by gluing them onto the wall.

Post-studio stage — Audience responses

The post-studio stage of this artistic endeavor involving outdoor installation created from waste wood materials yielded an audience response. These ephemeral artworks, born from the harmonious interplay of geometric regularities and organic irregularities, have the power to evoke a range of emotional, intellectual, and philosophical reactions among viewers (Gesimer et al., 2022). As audiences encountered these sculptural compositions in their outdoor setting, they were immediately confronted with a striking juxtaposition – the discarded fragments of waste wood, once deemed worthless, have been transformed into captivating works of art that challenge conventional notions of beauty and value. This initial dissonance ignited a sense of curiosity and introspection, prompting viewers to ponder the artistic agency of these materials and the broader themes of impermanence, cyclicity, and our relationship with the natural world (Browne et al., 2022: 575).

For some, the unique textures, grains, and weathered surfaces of the waste wood pieces evoked a profound sense of nostalgia, evoking memories of childhood

adventures and the comforting embrace of nature. The organic irregularities and imperfections present in these materials resonated with the viewer's own experiences of growth, change, and the embrace of imperfection – a recognition of the beauty that lies within the transient and impermanent. Others responded to the philosophical underpinnings of these installations, perceiving them as powerful statements on the consequences of our consumption patterns and the need for a more sustainable and regenerative approach to resource management. The act of transforming waste into art inspire contemplation on the cyclical nature of existence and our role as stewards of the natural environment (Yamada, 2021).

Intellectual discourse emerged as viewers engaged with the conceptual narratives woven into these artworks, exploring themes of object biographies, material phenomenology, and the agency of non-human entities. The interplay between the human-crafted geometric elements and the organic irregularities of the waste wood sparked discussions on the delicate balance between human ingenuity and the unpredictable forces of nature (Gesimer et al., 2022). For some audiences, the gradual transformation of these installations under the influence of the elements evoked a sense of poignancy and melancholy. As the artwork evolved and weathered over time, viewers were confronted with the transitory nature of existence, mirroring the cycles of growth, decay, and renewal that permeate our world. This ephemeral quality inspired contemplation on the fleeting nature of beauty and the importance of cherishing each moment (Lee, 2022).

Also, this outdoor installation created a deeper connection between audiences and their local environments, inviting viewers to engage with the surrounding landscapes and contemplate their relationship with the natural world. The integration of this artwork into public space created opportunities for community engagement, sparking conversations, and fostering a sense of collective appreciation for the artistic values and environmental narratives embodied within these creations. Ultimately, the post-studio stage of this waste wood installation represented a dynamic and ever-evolving dialogue between the artwork, the audience, and the natural environment. Each viewer's response became a unique tapestry, woven from personal experiences, cultural backgrounds, and philosophical perspectives, contributing to a rich and multifaceted discourse on the artistic, environmental, and existential implications of transforming the discarded into the extraordinary as illustrated in Figure 7.



Figure 7. Waste wood installation at wall at the entrance of TTU (Main campus), 2024

CONCLUSION

The research demonstrated the profound potential of waste wood materials as a medium for artistic expression and the communication of compelling environmental narratives. Through the thoughtful curation and arrangement of these discarded fragments, the study unlocked a visual language that invites contemplation on themes such as impermanence, cyclicity, and our intrinsic connection with the natural world.

It was found that the emphasis of the organic irregularities and imperfections inherent in waste wood pieces challenged the conventional notions of beauty

and value. The unique textures, grains, and weathered surfaces of these materials had been transformed into captivating artistic canvases, celebrating the beauty that lies within the imperfect and discarded. The act of repurposing and transforming waste materials into art installations promoted a deeper awareness of our consumption patterns and the consequences of our actions on the natural environment. These artworks served as powerful catalysts for promoting sustainable practices, encouraging the embrace of a circular economy, and inspiring a more conscientious approach to resource management.

The study revealed that situating this waste wood installation in an outdoor environment became a transformative nature of the artwork as it gradually weathers and evolves under the influence of natural elements. This ephemeral quality mirrored the cyclical rhythms of growth, decay, and renewal that govern our existence, inviting viewers to contemplate the transitory nature of beauty and the importance of cherishing each moment. The integration of these waste wood installations into diverse outdoor settings, ranging from urban plazas to rural landscapes facilitated a harmonious dialogue between art, nature, and the built environment. This artwork has the power to promote a deeper appreciation for the interconnectedness of all elements within our surroundings, encouraging a more holistic understanding of our role as conscious beings within the greater existence.

Interdisciplinary Collaboration and Future Research Directions

The study has highlighted the inherently interdisciplinary nature of this artistic endeavor, drawing upon insights from fields such as art, design, sustainability, material science, and environmental philosophy. Future research directions could explore advancements in sustainable material sourcing, innovative techniques for harnessing environmental factors in the artwork's transformation, and the development of educational programs to further promote the appreciation and understanding of these environmental narratives.

Authors' Contributions

The authors contributed equally to the study. Kwadwo Asare Apori collected data by taking photographs for the study as part of his project supervision of students' work, and Evans Kwadwo Donkor and Fredrick Boakye-Yiadom interpreted and analysed the data for saturation purposes.

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Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval was not required for this study.

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