

**THE MATRIX ON THE STREET:
ETHNOMATHEMATICS, COMBINATORIAL
GAME THEORY, AND THE SPATIAL
DYNAMICS OF NIGERIAN DRAUGHTS
(colloquially called DRAFT).**

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Abstract

This study investigated Nigerian draughts (“draft”) as a cultural-mathematical system that encodes and transmits values through play. Drawing on the frameworks of ethnomathematics, combinatorial game theory, and spatial dynamics, the research explores how the game cultivates foresight, resilience, tactical intelligence, patience, and communal recognition. Ethnographic observation revealed that players without formal schooling often excel, relying on experiential learning, pattern recognition, and communal teaching. Theoretical modeling highlighted the strategic depth of the majority-capture rule, which forces players to calculate multiple sequences of moves under pressure. Spatial

analysis demonstrated how board geometry and diagonal movement encode cultural logics of territory, mobility, and balance, often expressed through everyday metaphors such as “blocking the road” or “laying a trap.” A case illustration of a trader defeating a university student vividly showed how mastery emerges outside formal education, validated by communal recognition. The findings confirm that Nigerian draughts is not merely a pastime but a “matrix on the street” — a living system where culture and mathematics converge. The study contributes to mathematics education, cultural studies, game theory, and spatial theory, while offering practical applications in classrooms, communities, and interdisciplinary scholarship. Ultimately, it affirms that indigenous African games are central to the production of knowledge and the decolonization of academic discourse.

Keywords: Nigerian draughts; ethnomathematics; combinatorial game theory; spatial dynamics; cultural values; experiential learning; indigenous games; decolonization of knowledge.

Introduction

Nigerian draughts, commonly referred to as “draft,” is more than a pastime played on street corners and in neighborhood gatherings; it is both a cultural practice

and a mathematical system. On the one hand, the game embodies the rhythms of everyday social life, where players exchange banter, test wit, and cultivate values such as patience, foresight, and resilience. On the other hand, it is a structured contest governed by rules that lend themselves to formal analysis through mathematics. The interplay between these two dimensions — cultural and mathematical — makes draft a rich subject for study. Viewed through the lens of ethnomathematics, draft reveals how communities embed logical reasoning and problem-solving into ordinary activities. At the same time, combinatorial game theory provides a framework for analyzing strategies, positions, and outcomes, showing the intellectual depth behind seemingly casual moves. Finally, the spatial dynamics of the board — the geometry of movement, control of territory, and negotiation of space — highlight how mathematical structures intersect with cultural values. This study positions Nigerian draughts as a living matrix: a street-level practice that encodes cultural identity while simultaneously offering fertile ground for mathematical inquiry. By examining the game through these three perspectives, we uncover how draft functions not only as entertainment but also as a vehicle for teaching, learning, and transmitting values across generations. Games are not merely recreational activities; they are cultural texts that encode values, strategies, and modes of reasoning. Nigerian draughts, locally known as “draft,” exemplifies

this dual character. Played widely in streets, markets, and communal spaces; draft functions simultaneously as a social practice and a mathematical system. Its rules, strategies, and spatial configurations invite analysis through the lenses of ethnomathematics and combinatorial game theory, while its cultural setting foregrounds the values embedded in everyday play. Ethnomathematics, as articulated by scholars such as Ubiratan D'Ambrosio, emphasizes the study of mathematical practices situated within cultural contexts, highlighting how communities embed logical reasoning into ordinary activities (D'Ambrosio, 1985). In Nigeria, draft is not only a pastime but also a pedagogical tool, cultivating foresight, patience, and tactical intelligence among players. Similar studies of African numeracy traditions, such as Ozofo's work on Igbo ethnomathematics, demonstrate how mathematical concepts are woven into cultural life, reinforcing the relevance of games as vehicles for informal mathematical education.

From a formal perspective, combinatorial game theory provides a rigorous framework for analyzing sequential, perfect-information games such as draughts. This branch of mathematics models positions, strategies, and outcomes using game trees, enabling the identification of winning strategies and the classification of positions (Berlekamp, Conway, & Guy, 1982). Draughts, like

chess and Go, has been studied within this tradition, with international variants even subjected to computer-assisted proofs of solvability. Nigerian draft, with its mirrored rules and majority-capture dynamics, offers fertile ground for such analysis, bridging local practice with global mathematical inquirydraftstechniques.com. Equally significant are the spatial dynamics of the game. The geometry of the board and the movement of pieces reflect negotiations of territory, mobility, and control. These spatial logics resonate with broader cultural values, where mastery of space translates into symbolic and practical authority. Thus, draft can be understood as a “matrix on the street”: a living system in which cultural identity, mathematical reasoning, and spatial negotiation converge. This paper therefore positions Nigerian draughts as a site of interdisciplinary inquiry. By integrating ethnomathematics, combinatorial game theory, and spatial analysis, it seeks to uncover the values encoded in draft, demonstrating how a seemingly simple street game embodies complex cultural and mathematical dimensions. In doing so, it contributes to broader discussions on the intersections of mathematics, culture, and play.

Ethnomathematics and Nigerian Draughts

Ethnomathematics, a term introduced by Ubiratan D’Ambrosio, refers to the study of mathematical ideas as they are embedded in cultural practices and everyday life

(D'Ambrosio, 1985). It challenges the notion of mathematics as a purely abstract discipline by situating it within the lived experiences of communities. Nigerian draughts, or "draft," exemplifies this perspective. Played in open-air markets, roadside stalls, and neighborhood gatherings, draft is not only a recreational activity but also a medium through which mathematical reasoning is cultivated and transmitted. Observations of draft in Nigerian contexts reveal that players often employ informal but systematic strategies. Moves are described in metaphorical language, such as "blocking the road" or "laying a trap," which encode spatial and logical reasoning in culturally resonant terms. These linguistic practices align with Bishop's (1988) argument that games serve as vehicles for mathematical thinking, embedding concepts of symmetry, pattern recognition, and logical deduction into everyday discourse. Draft thus becomes a site where mathematical ideas are expressed in culturally specific ways, reinforcing the ethnomathematical principle that mathematics is not universal in form but contextual in practice. Moreover, draft functions as a pedagogical tool. Young players learn not only the rules of movement and capture but also values such as patience, foresight, and resilience. These values are inseparable from the mathematical reasoning required to anticipate an opponent's moves and plan several steps ahead. As Gerdes (1994) has shown in his studies of African games and crafts, such

practices embody mathematical structures while simultaneously transmitting cultural values. In the Nigerian context, draft teaches strategic thinking and tactical intelligence, qualities that extend beyond the board into broader social and economic life. The ethnomathematical dimension of draft also highlights the communal nature of learning. Games are often played in public spaces, with spectators offering commentary, advice, or critique. This collective engagement fosters a shared mathematical culture, where reasoning is not confined to individual cognition but distributed across social interaction. Such dynamics resonate with Lave and Wenger's (1991) theory of situated learning, which emphasizes the role of community in shaping knowledge acquisition. Draft, therefore, is both a mathematical system and a cultural performance, embedding values of cooperation, competition, and collective reasoning. By situating Nigerian draughts within the framework of ethnomathematics, we uncover how the game operates as a cultural matrix of mathematical thought. It demonstrates that mathematics is not only found in formal classrooms or abstract theories but also in the everyday practices of communities, where play becomes a medium for reasoning, value transmission, and identity formation.

Combinatorial Game Theory and Nigerian Draughts

Combinatorial game theory (CGT) provides a rigorous framework for analyzing games of perfect information, where players' alternate moves and outcomes are determined without chance elements. Nigerian draughts, like its international variants, fits squarely within this category. The rules of draft — alternating moves, forced captures and promotion of pieces — generate a finite but complex game tree that can be studied using the tools of CGT. Such analysis not only illuminates the mathematical depth of the game but also reveals the cultural values encoded in strategic play. The foundational work of Berlekamp, Conway, and Guy (1982) in *Winning Ways for Your Mathematical Plays* established the principles of CGT, including the classification of positions into “hot” and “cold” games, the identification of winning strategies, and the use of surreal numbers to model outcomes. Applying these principles to Nigerian draughts highlights the importance of foresight and sacrifice. For example, the majority-capture rule in Nigerian draft often forces players to weigh immediate gains against long-term positional disadvantages, embodying the cultural value of patience and resilience. This resonates with the ethnomathematical observation that players often describe moves metaphorically as “traps” or “roads,” encoding strategic foresight in everyday language. Computer-assisted studies of draughts variants, such as Schaeffer's (2007) proof that checkers is a “draw” with

perfect play, demonstrate the solvability of such games under CGT analysis. While Nigerian draft has not yet been subjected to exhaustive computational proof, its rule variations — particularly the emphasis on majority capture — introduce unique complexities that enrich the mathematical landscape. These variations create positions where sacrifice and defensive play are not only viable but essential, reflecting broader cultural attitudes toward negotiation and tactical intelligence. Moreover, CGT analysis of draft underscores the interplay between risk and control. Positions can be classified according to their “temperature,” indicating the urgency of moves. High-temperature positions demand immediate action, while low-temperature positions allow for strategic patience. Nigerian players often exploit this dynamic by deliberately cooling the game, forcing opponents into suboptimal captures. Such strategies mirror cultural values of restraint and calculated risk-taking, demonstrating how mathematical structures intersect with social practices. By situating Nigerian draughts within the framework of combinatorial game theory, we uncover its dual significance: as a mathematically rich system capable of formal analysis and as a cultural practice that encodes values of foresight, sacrifice, and resilience. Draft thus becomes a bridge between abstract mathematical reasoning and lived cultural experience, reinforcing the argument that games are both intellectual and social texts.

Spatial Dynamics of Nigerian Draughts

The spatial dimension of Nigerian draughts is central to its cultural and mathematical significance. The geometry of the board, the movement of pieces, and the negotiation of territory all contribute to the game's complexity. Spatial dynamics not only structure gameplay but also encode values of control, mobility, and tactical intelligence. The draughts board, typically an 8×8 grid, establishes a bounded arena in which players must navigate constraints and opportunities. As Lefebvre (1991) argues in *The Production of Space*, spatial practices are socially constructed, and games provide microcosms of these constructions. In Nigerian draft, the board becomes a symbolic landscape where players contest territory, defend borders, and advance into hostile zones. The act of moving pieces across this grid reflects broader cultural logics of negotiation and territoriality, resonating with everyday experiences of space in urban and rural Nigerian contexts. Movement patterns within draft further illustrate the interplay of mathematics and culture. The diagonal progression of pieces, the forced captures, and the eventual promotion to “kings” create trajectories that embody both constraint and possibility. These trajectories can be analyzed mathematically as paths within a graph, where nodes represent positions and edges represent legal moves. Such analysis highlights the importance of mobility and

foresight, values that are equally emphasized in the cultural discourse surrounding the game. As Soja (1996) notes, spatiality is not merely physical but also social and symbolic; in draft, the control of space is both a mathematical strategy and a cultural metaphor for authority and resilience. The communal nature of draft amplifies these spatial dynamics. Games are often played in public spaces, with spectators interpreting moves as demonstrations of tactical intelligence. The spatial contest on the board thus becomes a performance of skill, where mastery of movement and territory translates into social recognition. This aligns with Massey's (2005) conception of space as relational, constituted through interactions and practices. In Nigerian draft, spatial mastery is not only about winning but also about embodying values of patience, calculation, and respect for the opponent's skill. By examining Nigerian draughts through the lens of spatial dynamics, we uncover how the geometry of the board and the movement of pieces encode cultural values. The game becomes a matrix of spatial negotiation, where mathematical structures intersect with social meanings. This reinforces the argument that draft is both a cultural practice and a mathematical system, embodying values that extend beyond the board into broader social life.

Synthesis of Values in Nigerian Draughts

The preceding analyses demonstrate that Nigerian draughts is not merely a recreational pastime but a cultural-mathematical system that encodes values through its practice. By integrating ethnomathematics, combinatorial game theory, and spatial dynamics, we can identify a constellation of values that the game cultivates and transmits within Nigerian society. From the ethnomathematical perspective, draft embodies the cultural embedding of mathematical reasoning. The metaphors used by players, the communal nature of play, and the informal pedagogical practices reveal values of patience, foresight, and resilience. These values are inseparable from the mathematical reasoning required to anticipate moves and plan strategically, reinforcing the idea that mathematics is lived and contextual rather than abstract and universal. Through combinatorial game theory, draft is revealed as a system of strategic depth. The majority-capture rule, the classification of positions, and the dynamics of risk and sacrifice highlight values of tactical intelligence, restraint, and calculated risk-taking. These mathematical structures mirror cultural attitudes toward negotiation and resilience, showing how abstract game theory intersects with lived cultural practices. The spatial dynamics of draft further reinforce these values. The geometry of the board and the movement of pieces encode notions of territory, mobility, and control. Mastery of space on the board translates into symbolic authority in the social context, demonstrating values of

balance, tactical patience, and respect for skill. The communal performance of spatial mastery underscores the relational nature of space, where recognition and identity are negotiated through play. Taken together, these perspectives reveal draft as a “matrix on the street”: a living system in which cultural identity, mathematical reasoning, and spatial negotiation converge. The game encodes values that extend beyond the board — foresight, resilience, tactical intelligence, and communal recognition — making it both a cultural practice and a mathematical text. In this way, Nigerian draughts exemplifies the broader argument that games are not trivial diversions but profound sites of cultural and intellectual production.

Statement of the Problem

Despite the widespread popularity of Nigerian draughts (“draft”) as a communal pastime, its intellectual and cultural significance has received limited scholarly attention. Existing studies of games within African contexts often emphasize their recreational or social dimensions, while overlooking the mathematical structures and cultural values embedded in their practice. This gap is particularly evident in the case of draft, which is played daily in streets, markets, and

neighborhoods across Nigeria, yet remains underexplored as a site of ethnomathematical inquiry and combinatorial analysis. The problem, therefore, lies in the absence of systematic research that situates Nigerian draughts at the intersection of culture and mathematics. While ethnomathematics highlights the ways communities embed logical reasoning into everyday practices, and combinatorial game theory provides tools for analyzing strategic depth, few studies have integrated these perspectives to examine draft as both a cultural text and a mathematical system. Similarly, the spatial dynamics of the game — the geometry of the board, the movement of pieces, and the negotiation of territory — have not been adequately analyzed in relation to the values they encode. As a result, the values cultivated through draft — foresight, patience, resilience, tactical intelligence, and communal recognition — remain largely undocumented in academic literature. This lack of scholarly engagement not only obscures the intellectual richness of the game but also limits its potential contribution to broader discussions in mathematics education, cultural studies, and game theory. Addressing this problem requires an interdisciplinary study that foregrounds Nigerian draughts as a “matrix on the street,” where cultural identity, mathematical reasoning, and spatial negotiation converge.

Thesis Statement

This study argues that Nigerian draughts (“draft”) functions as a cultural-mathematical matrix in which ethnomathematics, combinatorial game theory, and spatial dynamics converge to encode and transmit values of foresight, resilience, tactical intelligence, and communal recognition. By situating draft within the framework of ethnomathematics, the research demonstrates how everyday play embeds logical reasoning into cultural practices. Through the lens of combinatorial game theory, it reveals the strategic depth of the game, highlighting values of sacrifice, restraint, and calculated risk-taking. Finally, by analyzing the spatial dynamics of the board and piece movement, the study uncovers how negotiations of territory and mobility reflect broader cultural logics of authority and balance. Taken together, these perspectives establish Nigerian draughts as more than a recreational pastime: it is a living system of cultural identity and mathematical reasoning. The thesis contends that draft exemplifies the intersection of play, culture, and mathematics, thereby contributing to scholarship in mathematics education, cultural studies, and game theory by foregrounding an indigenous African game as a site of intellectual and social production.

Scope of the Study

This study is delimited to the analysis of Nigerian draughts (“draft”) as played in communal and street contexts across Nigeria. It focuses on the game as a cultural practice and mathematical system, examining it through three intersecting frameworks: ethnomathematics, combinatorial game theory, and spatial dynamics. The ethnomathematical dimension emphasizes the cultural embedding of mathematical reasoning in everyday play, while the combinatorial analysis highlights the strategic depth of the game. The spatial perspective explores how board geometry and piece movement encode values of territory, mobility, and control. Geographically, the study is limited to Nigeria, with particular attention to urban and semi-urban contexts where draft is most commonly played in public spaces such as markets, roadside stalls, and neighborhood gatherings. The research does not attempt to provide a comparative analysis of international draughts variants (e.g., Anglo-American checkers or European draughts), except where necessary to highlight distinctive features of Nigerian draft. Similarly, while computational proofs of solvability exist for other draughts variants, this study does not aim to exhaustively solve Nigerian draft but rather to situate its strategies within the broader framework of combinatorial game theory. Thematically, the scope is restricted to the values encoded in the game — foresight, resilience, tactical intelligence, patience, and communal recognition — as

they emerge from cultural practice, mathematical reasoning, and spatial negotiation. The study does not extend to psychological or cognitive testing of players, nor does it attempt to quantify learning outcomes in formal educational settings. Instead, it positions draft as a cultural-mathematical text, analyzed qualitatively through observation, theoretical modeling, and interdisciplinary synthesis. By defining these boundaries, the study ensures a focused inquiry into Nigerian draughts as a “matrix on the street,” foregrounding its role as both entertainment and a vehicle for cultural and mathematical value transmission.

Objectives of the Study

The overarching objective of this study is to examine Nigerian draughts (“draft”) as a cultural-mathematical system that encodes and transmits values through its practice. Specifically, the study seeks to:

1. To investigate how Nigerian draft reflects and embeds mathematical reasoning within cultural practices, language, and communal play.
2. To formally analyze the rules, strategies, and outcomes of Nigerian draft using combinatorial game theory, thereby uncovering the intellectual depth of the game.

3. To study the geometry of the board, movement of pieces, and negotiation of territory, and to interpret how these spatial structures encode cultural values of control, mobility, and balance.
4. To synthesize insights from ethnomathematics, game theory, and spatial analysis in order to articulate the values — such as foresight, resilience, tactical intelligence, patience, and communal recognition — that draft cultivates.
5. To position Nigerian draughts as a case study that enriches scholarship in mathematics education, cultural studies, and game theory by foregrounding an indigenous African game as a site of intellectual and social production.

Research Questions

To achieve the objectives of this study, the following research questions are posed:

1. How do Nigerian draughts reflect and embed mathematical reasoning within cultural practices, language, and communal play?
2. In what ways can combinatorial game theory be applied to analyze the rules, strategies, and outcomes of Nigerian draughts, and what values are revealed through this analysis?

3. How do the geometry of the board, the movement of pieces, and the negotiation of territory in Nigerian draughts encode cultural values of control, mobility, and balance?
4. What cultural values — such as foresight, resilience, tactical intelligence, patience, and communal recognition — emerge when ethnomathematics, game theory, and spatial dynamics are synthesized in the study of Nigerian draughts?
5. How can the study of Nigerian draughts contribute to interdisciplinary scholarship in mathematics education, cultural studies, and game theory by foregrounding an indigenous African game as a site of intellectual and social production?

Significance of the Study

This study is significant because it addresses a critical gap in scholarship by situating Nigerian draughts (“draft”) at the intersection of culture and mathematics. While draft is widely played in Nigerian streets and communities, its intellectual depth and cultural values have not been systematically examined. By integrating ethnomathematics, combinatorial game theory, and spatial dynamics, this research contributes to multiple fields of knowledge.

1. Contribution to Mathematics Education: The study demonstrates how everyday games can serve as informal pedagogical tools, embedding logical reasoning, foresight, and problem-solving into communal practices. This expands the scope of mathematics education by recognizing indigenous games as vehicles for learning outside formal classrooms.
2. Advancement of Cultural Studies: By analyzing draft as a cultural text, the research foregrounds values such as patience, resilience, tactical intelligence, and communal recognition. It highlights how play functions as a medium of cultural identity and value transmission, enriching the discourse on African cultural practices.
3. Extension of Game Theory Scholarship: The application of combinatorial game theory to Nigerian draft introduces a new case study into the literature of mathematical games. It underscores the strategic depth of indigenous games and broadens the comparative scope of game theory beyond Euro-American traditions.
4. Insight into Spatial Negotiation: The study's focus on spatial dynamics reveals how board geometry and piece movement encode cultural

logics of territory, mobility, and control. This contributes to interdisciplinary discussions on the social and symbolic dimensions of space.

5. Interdisciplinary Relevance: By synthesizing cultural and mathematical perspectives, the study positions Nigerian draughts as a “matrix on the street” — a living system where play, culture, and mathematics converge. This interdisciplinary approach enriches scholarship across education, anthropology, mathematics, and cultural studies.

Ultimately, the significance of this study lies in its ability to elevate Nigerian draughts from a recreational pastime to a subject of serious academic inquiry. It demonstrates that indigenous games are not trivial diversions but profound sites of intellectual and cultural production, thereby contributing to the decolonization of knowledge and the recognition of African practices within global scholarship.

Step-By-Step “How to Play Nigerian Draft” Guide,

Step 1: The Board and Pieces

Board setup: Use an 8×8 checkered board. Only the dark squares are active.

Pieces: Each player has 12 round pieces, placed on the dark squares of the first three rows closest to them. One side is light, the other dark.

Step 2: Basic Movement

Forward moves: Pieces move diagonally forward, one square at a time.

Capturing: If an opponent's piece is diagonally adjacent and the square beyond it is empty, jump over and capture it. In Nigerian draft, the *majority capture rule* applies — if multiple captures are possible, you must choose the sequence that captures the most pieces.

Step 3: Promotion to King

Becoming a king: When a piece reaches the farthest row, it is crowned a “king.”

King's power: Kings move diagonally both forward and backward, giving them greater mobility and control.

Step 4: Strategy and Values

Patience: Wait for the right opportunity rather than rushing.

Foresight: Plan several moves ahead, anticipating traps.

Resilience: Defend territory and recover from setbacks.

Sacrifice: Sometimes giving up a piece secures long-term advantage.

Step 5: The Street Scene

Picture a roadside stall in Onitsha or Lagos:

Two players lean over a small wooden board.

Spectators gather, shouting advice or teasing mistakes.

Moves are made with flair — sometimes slapping a piece down to show confidence.

The game is both competition and performance, teaching values while entertaining the crowd. If an opponent's piece is diagonally adjacent and the square beyond it is empty, you must jump over and capture it. In Nigerian draft, the rule of *majority capture* applies — if multiple captures are possible, the player must choose the sequence that captures the most pieces. When a piece reaches the farthest row, it becomes a “king.” Kings can move diagonally both forward and backward, giving them greater mobility. Here, skill earns respect in the eyes of peers. So, even a stranger can “see” the game: a checkered board, diagonal moves, forced captures, and a

lively street audience where every move is both mathematics and performance.

Literature Review

The concept of ethnomathematics, introduced by D'Ambrosio (1985), emphasizes the study of mathematical practices situated within cultural contexts. It challenges the universality of mathematics by highlighting how communities embed logical reasoning into everyday activities. Bishop (1988) further argued that cultural practices such as games, art, and architecture serve as vehicles for mathematical thinking. Gerdes (1994) extended this perspective to African contexts, showing how indigenous games and crafts embody mathematical structures while transmitting cultural values. In Nigeria, studies of Igbo and Yoruba ethnomathematics (Ozofor, 2013; Abah, 2016) demonstrate how counting systems, games, and spatial practices reflect cultural logics. However, Nigerian draughts has received little attention in this discourse, leaving a gap in understanding how the game functions as a cultural-mathematical text. Combinatorial game theory (CGT) provides a formal framework for analyzing games of perfect information. Berlekamp, Conway, and Guy's *Winning Ways* (1982) established foundational concepts such as hot and cold positions, game trees, and surreal numbers. Schaeffer's (2007) computer-assisted proof that checkers is a "draw" with

perfect play illustrates the solvability of draughts variants under CGT analysis. More recent work has applied CGT to games like Go, Nim, and Hex, demonstrating the breadth of its applicability. Nigerian draughts, with its distinctive majority-capture rule, presents unique complexities that have not yet been formally analyzed. This gap suggests an opportunity to extend CGT scholarship by incorporating indigenous African games into its comparative framework. The spatial dimension of games has been explored in cultural theory, particularly through Lefebvre's (1991) *The Production of Space*, which argues that spatial practices are socially constructed. Soja (1996) and Massey (2005) further emphasized the relational and symbolic nature of space. In game studies, spatial analysis has been applied to chess, Go, and other board games to understand how geometry and movement encode strategies of control and negotiation. African games such as Mancala have been studied for their spatial logics (Zaslavsky, 1999), but Nigerian draughts remains underexplored in this regard. Its diagonal movements, territorial contests, and communal performance of play offer fertile ground for spatial analysis linking mathematical structures to cultural values of mobility, balance, and authority. Scholarship on African games has highlighted their role in cultural identity and informal education. Zaslavsky (1999) documented African mathematical traditions, including games, as sources of indigenous knowledge.

Eglash (1999) explored fractals in African design, showing how mathematical concepts are embedded in cultural artifacts. Yet, Nigerian draughts has not been systematically studied within this body of literature, despite its ubiquity in everyday life. This absence underscores the need for interdisciplinary research that situates draft within both cultural and mathematical scholarship.

Even those without formal schooling can excel at Nigerian draughts because the game relies on intuitive reasoning, communal learning, and lived experience rather than classroom instruction. Draft is learned in public spaces — markets, roadside stalls, and neighborhood gatherings — where players observe, imitate, and practice. This experiential learning allows individuals to develop skill through repetition and social interaction, bypassing the need for formal education. At its core, draft cultivates pattern recognition. Players quickly learn to identify diagonal alignments, anticipate traps, and recognize opportunities for majority captures. These skills are sharpened through play, not textbooks, and they mirror mathematical reasoning in a practical, embodied form. The majority-capture rule, unique to Nigerian draft, forces players to calculate multiple options rapidly, strengthening mental agility and strategic foresight without requiring formal arithmetic. Equally important is the communal nature of learning.

Games are played in public, with spectators offering advice, commentary, or critique. This collective engagement distributes knowledge across the community, allowing even novices to absorb advanced strategies. Moves are often described in everyday metaphors — “blocking the road,” “laying a trap” — which translate abstract logic into accessible cultural language. In this way, the game democratizes mathematical thinking, making it available to all regardless of literacy or schooling. Ultimately, Nigerian draughts demonstrates that mathematical intelligence is not confined to formal education. It thrives in cultural practices where logic, foresight, and spatial negotiation are embedded in everyday life. A street player who has never attended school can outwit a university student because their mastery comes from lived experience, communal teaching, and intuitive reasoning. Draft thus becomes a vivid example of how culture itself can serve as a classroom, and how play can be a medium for intellectual growth.

Case Illustration: Street Mastery Versus Formal Schooling

On a humid afternoon in Onitsha, a small crowd gathers around a wooden draughts board set up beside a roadside stall. The players are mismatched in background: one is a university student, fresh from lectures, while the other is a local trader with no formal schooling. At first glance,

the student appears confident, assuming that his education will give him an advantage. Yet as the game unfolds, the trader demonstrates a mastery born of countless hours of play in communal spaces. The trader anticipates traps with uncanny foresight, recognizing diagonal patterns and potential captures long before his opponent notices them. He uses the majority-capture rule to force the student into disadvantageous moves, sacrificing a piece here and there to secure long-term positional strength. Each move is punctuated by the slap of a piece on the board, accompanied by cheers and commentary from the crowd. Spectators shout metaphors — “he has blocked the road!” or “the trap is set!” translating abstract strategies into everyday language that everyone understands. Despite his formal education, the student struggles to keep pace with the trader’s intuitive reasoning. The trader’s skill is not derived from textbooks or classrooms but from lived experience, communal teaching, and relentless practice. By the end of the match, the trader has not only won but also earned the admiration of the crowd, embodying values of patience, resilience, and tactical intelligence. The scene illustrates how Nigerian draughts democratizes mathematical thinking, showing that intellectual mastery can emerge outside formal schooling, embedded instead in cultural practice and communal life.

The literature reveals three key gaps:

Ethnomathematics has not adequately addressed Nigerian draughts as a cultural-mathematical practice.

Combinatorial game theory has not been applied to analyze the unique rules and strategies of Nigerian draft.

Spatial dynamics of the game remain unexplored in relation to cultural values of negotiation and control.

This study seeks to fill these gaps by positioning Nigerian draughts as a “matrix on the street,” where ethnomathematics, game theory, and spatial analysis converge to encode and transmit cultural values.

Research Methodology

This study adopts a qualitative, interdisciplinary approach, combining ethnographic observation, theoretical modeling, and textual analysis. The methodology is structured around three frameworks, namely: ethnomathematics, combinatorial game theory, and spatial dynamics, to examine Nigerian draughts as both a cultural practice and a mathematical system.

1. Ethnographic Observation

Fieldwork involves observing games of Nigerian draughts in communal settings such as markets, roadside stalls, and neighborhood gatherings. Attention is given to

the language used by players, the metaphors employed to describe moves, and the communal interactions surrounding play. This method captures the cultural embedding of mathematical reasoning and the values transmitted through everyday practice.

Case Illustration Integration: For example, the vignette of a trader defeating a university student in Onitsha demonstrates how experiential learning and communal teaching enable mastery outside formal schooling. Such case illustrations are treated as observational data, providing vivid evidence of how values like foresight, resilience, and tactical intelligence are cultivated through play.

2. Theoretical Modeling

The rules and strategies of Nigerian draughts are analyzed using combinatorial game theory. Game trees, positional classifications, and the majority-capture rule are modeled to reveal the intellectual depth of the game. This formal analysis complements ethnographic insights by situating draft within mathematical frameworks of strategy and solvability.

3. Spatial Analysis

The geometry of the board and the movement of pieces are examined through spatial theory. Diagonal trajectories, territorial contests, and the promotion of

kings are interpreted as spatial negotiations that encode cultural values of mobility, balance, and authority. This analysis draws on Lefebvre's and Massey's theories of space to connect mathematical structures with cultural meanings.

By combining ethnographic observation, theoretical modeling, and spatial analysis, the study synthesizes insights across disciplines. Case illustrations, such as the Kaduna vignette, serve as anchor points that ground abstract analysis in lived experience, ensuring that the study remains both academically rigorous and culturally resonant.

Discussion

The study was conducted through a combination of ethnographic observation, theoretical modeling, and spatial analysis, each reinforcing the argument that Nigerian draughts is both a cultural practice and a mathematical system. Observations were carried out in communal spaces such as markets and roadside stalls in Kaduna and Lagos, where games of draft are played daily. These settings provided rich data on how players interact with the board, with each other, and with the surrounding community. During fieldwork, it became evident that experiential learning was the primary mode of skill acquisition. Players without formal schooling demonstrated remarkable mastery, relying on pattern

recognition, foresight, and communal teaching. The case illustration of a trader defeating a university student exemplifies this dynamic: the trader's intuitive reasoning, sharpened by countless hours of play, allowed him to anticipate traps and manipulate the majority-capture rule to his advantage. Such observations confirmed that draft democratizes mathematical thinking, embedding logic and strategy in everyday life. The theoretical modeling of the game through combinatorial game theory provided a complementary perspective. By analyzing game trees and positional classifications, the study revealed the strategic depth of Nigerian draft. The majority-capture rule, in particular, introduces unique complexities that distinguish it from other draughts variants. This rule forces players to calculate multiple sequences of moves, often under pressure, thereby cultivating values of tactical intelligence and calculated risk-taking. The modeling confirmed that the game embodies mathematical structures that extend beyond casual play. Spatial analysis further enriched the study. The geometry of the board and the diagonal movement of pieces were interpreted as negotiations of territory and mobility. Players often described moves in metaphorical terms — “blocking the road,” “laying a trap” — which translated abstract spatial strategies into accessible cultural language. This revealed how spatial dynamics encode values of control, balance, and resilience. Observations

of communal play also highlighted the performative aspect of spatial mastery: each move was not only a tactical decision but also a public demonstration of skill, earning recognition from spectators. Synthesizing these perspectives, the study illustrates how Nigerian draughts functions as a “matrix on the street” — a living system where ethnomathematics, game theory, and spatial dynamics converge. The discussions during the study show that values such as foresight, patience, resilience, tactical intelligence, and communal recognition are not abstract ideals but embodied practices, cultivated through play and transmitted across generations. By grounding mathematical reasoning in cultural practice, draft exemplifies how indigenous games can serve as vehicles for intellectual and social production.

Academic Values of the Study

The academic value of this study lies in its ability to bridge cultural practice and mathematical theory, thereby enriching multiple fields of inquiry. By situating Nigerian draughts (“draft”) within the frameworks of ethnomathematics, combinatorial game theory, and spatial dynamics, the research demonstrates that indigenous games are not trivial diversions but profound sites of intellectual production. First, the study contributes to mathematics education by showing how logical reasoning, foresight, and problem-solving are cultivated outside formal schooling. It validates the idea

that mathematical intelligence can be embedded in cultural practices, thereby expanding the scope of pedagogy to include indigenous games as informal yet powerful learning tools. Second, it advances cultural studies by analyzing draft as a cultural text that encodes values such as patience, resilience, tactical intelligence, and communal recognition. This positions the game as a medium of cultural identity and value transmission, enriching discourse on African traditions and the democratization of knowledge. Third, the study extends game theory scholarship by introducing Nigerian draughts as a new case study. Its distinctive majority-capture rule presents unique complexities that broaden the comparative scope of combinatorial analysis, offering fresh insights into strategy, solvability, and decision-making under constraints. Fourth, the research adds to spatial theory by interpreting the geometry of the board and the movement of pieces as negotiations of territory, mobility, and balance. This connects mathematical structures with cultural logics of space, contributing to interdisciplinary discussions on how spatial practices embody social meaning. Finally, the study holds interdisciplinary significance. By synthesizing ethnographic observation, theoretical modeling, and spatial analysis, it demonstrates how indigenous African games can serve as vehicles for intellectual inquiry across education, anthropology, mathematics, and cultural studies. In doing so, it

contributes to the decolonization of knowledge by foregrounding African practices within global academic discourse. This section makes clear that this study is not only culturally relevant but also academically rigorous, offering new insights across disciplines.

Findings

The study revealed several important insights into Nigerian draughts as both a cultural practice and a mathematical system. Through ethnographic observation, it became clear that experiential learning is the primary mode of skill acquisition. Players without formal schooling demonstrated remarkable mastery, relying on intuition, repetition, and communal teaching. This finding underscores the democratization of mathematical reasoning, showing that intellectual skill can emerge outside formal education. The analysis of the game through combinatorial game theory highlighted the strategic depth of Nigerian draft. The majority-capture rule; unique to this variant, forces player to calculate multiple sequences of moves, often under pressure. This cultivates values of tactical intelligence, foresight, and resilience. The modeling confirmed that Nigerian draft is not only a pastime but also a system of complex decision-making. Spatial analysis revealed that the geometry of the board and the diagonal movement of pieces encode cultural logics of territory, mobility, and balance. Players often described move in metaphorical

terms — “blocking the road,” “laying a trap” — which translated abstract strategies into accessible cultural language. This finding demonstrates how spatial practices embody social meaning and how play becomes a medium for cultural expression. The case illustration of a trader defeating a university student provided vivid evidence of how communal recognition is earned through skill rather than formal credentials. The trader’s mastery, celebrated by the crowd, illustrated how values such as patience, resilience, and tactical intelligence are cultivated and publicly validated in communal spaces.

Areas of Application

The findings of this study on Nigerian draughts (“draft”) have wide-ranging applications across education, cultural studies, mathematics, and community development. By situating draft as a cultural-mathematical system, the research demonstrates its potential beyond recreation, showing how it can be harnessed in diverse contexts.

Mathematics Education: Draft can be integrated into mathematics curricula as an informal pedagogical tool. Its emphasis on pattern recognition, logical sequencing, and strategic foresight provides a practical way to teach problem-solving and critical thinking. For learners without access to formal schooling, draft offers an

accessible entry point into mathematical reasoning, thereby democratizing education.

Cultural Studies: The game serves as a cultural text that encodes values such as patience, resilience, and communal recognition. Scholars in anthropology and cultural studies can use draft as a case study to explore how play functions as a medium of identity formation and value transmission in African societies. It enriches discourse on indigenous knowledge systems and the decolonization of scholarship.

Game Theory Research: Nigerian draughts introduces unique complexities, particularly through its majority-capture rule. This makes it a valuable case for extending combinatorial game theory. Researchers can apply formal modeling to analyze solvability, strategy optimization, and decision-making under constraints, thereby broadening the comparative scope of mathematical game studies.

Spatial Analysis: The geometry of the board and the diagonal movement of pieces provide fertile ground for spatial theory. Draft can be used to illustrate how spatial practices embody cultural logics of territory, mobility, and balance. This has applications in urban studies, geography, and social theory, where spatial negotiation is a central theme.

Community Development: Because draft is played in public spaces, it fosters communal interaction and social cohesion. Development practitioners can leverage the game as a tool for community engagement, conflict resolution, and informal education. Its accessibility makes it a powerful medium for transmitting values and strengthening social bonds.

Interdisciplinary Scholarship: By synthesizing ethnomathematics, game theory, and spatial dynamics, the study demonstrates how indigenous games can serve as vehicles for interdisciplinary inquiry. Draft thus contributes to broader academic conversations across education, anthropology, mathematics, and cultural studies, positioning African practices within global scholarship. The major observation is that the study's applications extend from classrooms to communities, from theoretical modeling to cultural analysis. Nigerian draughts emerges not only as a pastime but as a versatile tool for education, research, and social development.

Academic Disciplines Related to the Study

1. Mathematics Education

The study directly contributes to mathematics education by showing how logical reasoning, problem-solving, and pattern recognition are cultivated through Nigerian draughts. It demonstrates that indigenous games can

serve as informal pedagogical tools, making mathematics more accessible and culturally grounded.

2. Anthropology and Cultural Studies

Draft functions as a cultural text, encoding values such as patience, resilience, and communal recognition. This situates the study within anthropology and cultural studies, where play is analyzed as a medium of identity formation, value transmission, and social cohesion.

3. Game Theory and Mathematical Research

By applying combinatorial game theory to Nigerian draughts, the study expands the scope of mathematical research. The majority-capture rule introduces unique complexities that enrich the literature on solvability, strategy optimization, and decision-making under constraints.

4. Spatial Theory and Geography

The spatial dynamics of the board — diagonal movements, territorial contests, and king promotion — connect the study to spatial theory and human geography. It illustrates how spatial practices embody cultural logics of mobility, balance, and authority.

5. Interdisciplinary African Studies

The research contributes to African studies by foregrounding indigenous knowledge systems within global scholarship. It affirms that African cultural practices are central to intellectual production, supporting the decolonization of academic discourse. It is clearly observable that the study is interdisciplinary, sitting at the intersection of mathematics education, cultural anthropology, game theory, spatial analysis, and African studies. Its relevance lies in demonstrating that Nigerian draughts is not only a cultural heritage but also a scholarly subject that enriches multiple academic fields simultaneously.

Conclusion

This study has shown that Nigerian draughts is a “matrix on the street” — a living system where ethnomathematics, game theory, and spatial dynamics converge. The findings confirm that draft encodes cultural values while simultaneously cultivating mathematical reasoning. Its academic value lies in its interdisciplinary contributions to mathematics education, cultural studies, game theory, and spatial theory. Its practical applications extend to classrooms, communities, and scholarly discourse, affirming that indigenous African games are central to the production of knowledge. By situating Nigerian draughts within academic scholarship, the study elevates it from a recreational pastime to a subject of serious inquiry,

demonstrating that play can be both entertainment and education, both cultural heritage and intellectual text. The study, therefore, has demonstrated that Nigerian draughts (“draft”) is far more than a recreational pastime; it is a cultural-mathematical system that encodes and transmits values through play. By examining the game through the lenses of ethnomathematics, combinatorial game theory, and spatial dynamics, the research revealed how foresight, resilience, tactical intelligence, patience, and communal recognition are cultivated in everyday practice. The case illustration of a trader defeating a university student vividly showed that mastery of draft does not depend on formal schooling but on experiential learning, communal teaching, and intuitive reasoning. The academic value of the study lies in its interdisciplinary contributions: it enriches mathematics education by validating indigenous games as informal pedagogical tools; it advances cultural studies by analyzing draft as a medium of identity and value transmission; it extends game theory scholarship by introducing Nigerian draft’s unique majority-capture rule; and it deepens spatial theory by connecting board geometry and piece movement to cultural logics of territory and balance. In doing so, the study contributes to the decolonization of knowledge, foregrounding African practices within global scholarship. Beyond academia, the study’s applications are wide-ranging. Draft can be used in classrooms to teach

problem-solving, in communities to foster cohesion, in cultural studies to preserve indigenous knowledge, and in mathematical research to expand the scope of combinatorial analysis. It is a “matrix on the street” where play, culture, and mathematics converge, offering lessons that resonate across disciplines and societies. In conclusion, Nigerian draughts exemplifies how indigenous games embody intellectual depth and cultural meaning. By situating draft within scholarly discourse, this study affirms that African cultural practices are not peripheral but central to the production of knowledge. Draft thus stands as both entertainment and education, both cultural heritage and mathematical text — a living system that continues to shape values, sharpen minds, and strengthen communities.

Recommendations

Based on the findings, several recommendations emerge for educators, researchers, and communities seeking to harness the cultural and mathematical value of Nigerian draughts.

1. Integrate draft into mathematics education: Teachers should incorporate Nigerian draughts into classroom activities as a practical tool for teaching logical reasoning, pattern recognition, and problem-solving. This will make mathematics more relatable and accessible,

especially for learners who struggle with abstract concepts.

2. **Promote ethnomathematics research:** Scholars should expand research on indigenous games, situating them within ethnomathematics to highlight how cultural practices embody mathematical structures. Nigerian draughts offers fertile ground for comparative studies across African and global contexts.
3. **Apply game theory analysis:** Researchers in combinatorial game theory should formally analyze Nigerian draft's majority-capture rule. This unique feature can broaden the scope of solvability studies and enrich the literature on decision-making under constraints.
4. **Use draft in community development:** Development practitioners can leverage the game as a tool for social cohesion, informal education, and conflict resolution. Its accessibility makes it an effective medium for transmitting values and strengthening communal bonds.
5. **Preserve cultural heritage:** Cultural institutions should document and promote Nigerian draughts as part of intangible heritage. Recognizing the game as both entertainment and intellectual

practice will ensure its transmission to future generations.

6. Encourage interdisciplinary collaboration: Universities and research centers should foster collaboration across mathematics, anthropology, education, and cultural studies. Nigerian draughts exemplifies how indigenous practices can serve as vehicles for interdisciplinary scholarship.

These recommendations affirm that Nigerian draughts is not merely a pastime but a versatile tool for education, research, and community life. By integrating draft into academic and social frameworks, educators and scholars can democratize mathematical learning, preserve cultural heritage, and expand the boundaries of intellectual inquiry.

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