

Communicating the Dynamics of Papal Conclave and Semiology of Smoke in Pope Leo XIV's Election in Digital Era: Implications on African Democracies

Timothy Ekeledirichukwu Onyejelem
Federal University Otuoke, Bayelsa State

Corresponding Author: Timothy Ekeledirichukwu Onyejelem;
timothyeyo@fuotuo.ke.edu.ng

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ABSTRACT

The Papal Conclave, an ancient process of electing the Pope, has long relied on smoke signals – black for inconclusive and white for successful elections – as a universal semiotic language transcending cultural and linguistic barriers. In the digital era, however, these traditional symbols are increasingly mediated, reinterpreted, and amplified through online platforms, raising questions about transparency, accessibility, and public perception. This study, grounded in the Digital Generative Multimedia Tool Theory (DGMTT) and Semiotics, employs qualitative content analysis of international media, Vatican communications, and social media during the 2013 and 2025 papal elections to explore how digital dissemination reshapes the meaning and impact of smoke signals. Findings suggest that the integration of traditional symbols with digital strategies enhances global engagement, fosters real-time participation, and strengthens perceptions of transparency. By linking ecclesiastical communication with democratic discourse, the research highlights lessons for African democracies, recommending hybrid communication models that combine symbolic traditions with digital dissemination to promote civic engagement, trust, and democratic development

INTRODUCTION

The Papal Conclave, an institution with roots tracing back to the early centuries of the Church, represents one of the most enduring and symbolically rich electoral processes in human history. It is the mechanism through which the College of Cardinals elects the Bishop of Rome, who serves as the Pope and spiritual leader of the world's over 1.3 billion Roman Catholics (Pew Research Center, 2023). This ancient tradition, evolving significantly over a millennium, crystallised into its present form with specific regulations governing the seclusion of cardinals, most notably by Gregory X in 1274, giving rise to the term 'conclave' (from Latin *cum clave*, meaning 'with a key') (Reese, 1996, p. 55).

Central to the communication of the Conclave's outcome, particularly since the early 20th century, is the deeply entrenched semiology of smoke signals. Following each ballot, the burning of the cardinals' papers, mixed with specific chemical additives, produces either black smoke (*fumata nera*) to signify an inconclusive vote or white smoke (*fumata bianca*) to announce the successful election of a new Pontiff (McBrien, 2000, p. 195). This ritual, first formally codified for universal use at the Conclave of 1903 (Vatican News, 2023), serves as a poignant, non-verbal message, transcending linguistic barriers and instantly conveying a profound ecclesiastical event to a global audience. The Catechism of the Catholic Church (CCC 1146) underscores the importance of signs and symbols in divine communication, asserting that "the celebration of the liturgy is interwoven with signs and symbols." The smoke, therefore, is not merely a signal but a sacred sign, imbued with theological and historical significance, making it a powerful semiotic tool.

The historical context of papal elections reveals a gradual tightening of procedures to prevent external influence and ensure the College of Cardinals' autonomy. From the chaotic and often politically manipulated elections of the first millennium to the more structured, albeit sometimes lengthy, conclaves of the late medieval period, the Church consistently sought mechanisms to safeguard the integrity of the process (Collins, 2009). The reforms initiated by Pope John Paul II's Apostolic Constitution *Universi Dominici Gregis* (1996) and subsequently modified by Pope Benedict XVI's *Motu Proprio Normas Nonnullas* (2013) further refined the rules, maintaining the absolute secrecy of the proceedings while confirming the communicative role of the smoke signals and the ringing of bells upon a successful election.

The contemporary era, however, presents a dynamic shift in communication paradigms. The dawn of the 21st century has been characterised by the explosive growth of digital media, transforming how information is produced, disseminated, and consumed (Castells, 2009). For a historical institution like the Catholic Church, navigating this digital landscape, particularly during a pivotal event like a papal election, introduces unprecedented challenges and opportunities. The semiology of smoke, once primarily interpreted by those physically present in St. Peter's Square or through traditional broadcast media, now enters a complex, hyper-connected digital ecosystem (Couldry & Hepp, 2017).

This transition compels a re-evaluation of how traditional symbols are mediated through live streams, social media platforms, news websites, and instant messaging services, thereby influencing public perception, transparency, and global engagement (Jenkins, 2006). The rapid dissemination of information, often accompanied by immediate commentary and analysis, creates a new layer of interpretation that was absent in previous eras. The implications of these communication dynamics extend beyond the Vatican, resonating profoundly within emerging democracies, particularly across the African continent. Many African nations grapple with challenges related to transparency, civic engagement, and trust in electoral processes (Ake, 2000; Gyimah-Boadi, 2004). The ability of an ancient, hierarchical institution like the Catholic Church to communicate a complex electoral outcome, rich in symbolism, effectively and transparently in a digital age offers valuable comparative insights. The spectacle of the conclave, with its clear signals of success or failure, provides a model of decisive, if ritualised, communication that could hold lessons for democratic institutions striving to build public confidence in their own, often more opaque, electoral systems. For instance, the clarity of the white smoke, instantly signifying a definitive result, contrasts sharply with the often-protracted and contested electoral outcomes witnessed in some African polities.

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This shift was vividly demonstrated during the recent Conclave of May 2025, which culminated in the election of Cardinal Robert Francis Prevost as Pope Leo XIV. This election stands as a contemporary benchmark, being the first papal election to occur deep within an era dominated by ubiquitous digital communication. Unlike previous conclaves where digital media played a nascent or supplementary role, Pope Leo XIV's election unfolded in a landscape where real-time social media reactions, live-streamed analyses, and instantaneous global news updates were the norm. This historical event thus provides a crucial, recent case study for understanding the interface between ancient ritual and modern communication.

The implications of these communication dynamics extend beyond the Vatican, resonating profoundly within emerging democracies, particularly across the African continent. Many African nations grapple with challenges related to transparency, civic engagement, and trust in electoral processes (Ake, 2000; Gyimah-Boadi, 2004). The ability of an ancient, hierarchical institution like the Catholic Church to communicate a complex electoral outcome, rich in symbolism, effectively and transparently in a digital age offers valuable comparative insights. The spectacle of the conclave, with its clear signals of success or failure, provides a model of decisive, if ritualised, communication that could hold lessons for democratic institutions striving to build public confidence in their own, often more opaque, electoral systems. For instance, the clarity of the white smoke, instantly signifying a definitive result, contrasts sharply with the often-protracted and contested electoral outcomes witnessed in some African polities.

This study, therefore, positions itself at the intersection of ecclesiastical communication, digital media studies, and democratic theory. It seeks to unpack the intricate relationship between traditional semiotics and modern digital dissemination, using the papal conclave and the semiology of smoke in the recent election of Pope Leo XIV as its primary contemporary case. By analysing how these ancient symbols were presented and consumed in the digital era during this pivotal event, the research aims to illuminate the evolving nature of global communication and draw pertinent implications for enhancing transparency, fostering civic engagement, and ultimately strengthening democratic practices in African nations. The confluence of a profound spiritual event with the pervasive reach of digital technology offers a unique lens through which to examine the universal challenges of effective communication in an increasingly interconnected world.

Statement of the Problem

The Papal Conclave, an institution steeped in centuries of tradition and governed by canonical law (e.g., *Universi Dominici Gregis*, 1996), communicates the momentous election of a new Pontiff through a deeply symbolic ritual: the emission of black or white smoke from the Sistine Chapel's chimney (Reese, 1996, p. 55; McBrien, 2000, p. 195). This semiology of smoke, established for universal recognition, serves as a powerful, non-verbal signifier, instantly conveying the outcome to a global audience (CCC 1146). However, the recent election of Pope Leo XIV (Cardinal Robert Francis Prevost) on May 8, 2025, occurred within an

unprecedented and hyper-connected digital media landscape that significantly alters how this ancient ritual is received, interpreted, and understood.

The core problem of this study lies in the communication paradox that emerges when an inherently analogue, ritualistic communication mechanism, the conclave smoke signals, is mediated through a pervasive and dynamic digital environment. While the smoke's traditional semiotic meaning remains fixed, its digital dissemination introduces new layers of complexity and potential disjunctures. For instance, the instantaneous nature of digital news, live streaming, and social media commentary creates a real-time, often multi-vocal, interpretative space around the smoke signals (Couldry & Hepp, 2017). This raises critical questions about whether the intended clarity and authority of the traditional signal are maintained or diluted when filtered through diverse digital platforms, each with its own affordances, algorithms, and user-generated content (Castells, 2009). The rapid spread of information, coupled with immediate global reactions, means that the interpretation of the smoke is no longer solely a function of its physical emission but also of its digital framing and the accompanying narrative construction by traditional and new media actors.

The digital mediation of Pope Leo XIV's election extends beyond mere transmission; it fundamentally influences public perception and the perceived transparency of the conclave process. According to Lazer et al (2018), in an era where "fake news" and misinformation can rapidly proliferate the authoritative communication of a sacred election's outcome, however symbolic, demands careful scrutiny of its digital presentation. The traditional reliance on trust in the Church's communication is now tested against the backdrop of a fragmented and often sceptical digital public sphere. The question, therefore, is not merely how the smoke was communicated digitally during Pope Leo XIV's election, but rather what impact this digital mediation had on global public understanding, engagement, and the perception of the Church's transparency in its most sacred electoral process.

Compounding this problem is the significant, yet underexplored, implication for nascent democratic practices, particularly across the African continent. African nations frequently contend with challenges pertaining to electoral transparency, civic participation, and building public trust in democratic institutions (Gyimah-Boadi, 2004; Opekin, 2017). The communication strategies employed by a globally significant, hierarchical institution like the Catholic Church during a critical leadership transition, especially when these strategies leverage both ancient symbolism and modern digital tools, offer invaluable lessons. However, there is a distinct research void concerning how the successful communication of Pope Leo XIV's election, via its unique semiology in the digital era, might inform or influence approaches to fostering trust and clarity in electoral outcomes within diverse African democratic contexts.

Understanding how the Vatican bridges tradition and digital innovation to maintain authority and clarity in communication could provide crucial comparative insights for African polities striving to enhance their own democratic legitimacy and public engagement in an increasingly digitalised

political landscape. This study, therefore, addresses the pressing need to critically analyse this convergence and its far-reaching consequences.

Objectives of the Study

The primary goal of this study is to examine the communication dynamics of the papal conclave, concentrating on the semiotics of smoke signals in the election of Pope Francis' successor (Pope Leo XIV) within the current digital technology context. Specifically, the following objectives were formulated to guide the study:

1. To examine the mediation and reinterpretation of traditional symbols, such as white and black smoke, using contemporary digital platforms.
2. To assess the impact of digital distribution on public perception and the perceived openness of the conclave process.
3. To investigate how these changing ways of communicating could help improve democracy and civic involvement in Africa.

LITERATURE REVIEW

This study navigates the intricate relationship between traditional ecclesiastical communication and modern digital dynamics, particularly through the lens of the recent Papal Conclave that elected Pope Leo XIV (Cardinal Robert Francis Prevost) on 8 May 2025. To fully appreciate this intersection, a robust conceptual framework drawing from several key areas is essential: the Papal Conclave as an electoral process, the semiology of smoke, digital communication in the modern era, and the implications for democratic practices in Africa.

The Papal Conclave: A Historical and Canonical Electoral Process

The Papal Conclave is not merely an election but a deeply symbolic and canonically regulated act of the Catholic Church. Historically, its evolution reflects a continuous effort to safeguard the election of the Bishop of Rome – the Pope – from external interference and to ensure a legitimate succession to the Chair of Saint Peter (Reese, 1996, pp. 54-58). Originating from pragmatic needs to expedite papal elections and prevent undue influence, the concept of cardinals gathering cum clave (with a key) was codified by Pope Gregory X in 1274, following the protracted election at Viterbo (Baumgartner, 2203, p. 32). This seclusion, ensuring secrecy and prayerful deliberation, remains a cornerstone of the process.

Canon Law, particularly the Apostolic Constitution *Universi Dominici Gregis* (John Paul II, 1996), meticulously outlines the procedures, from the solemn oaths of secrecy (Articles 48-51) to the methods of voting and the subsequent burning of ballots (Articles 63-74). These regulations underscore the gravity of the election, which is viewed not merely as a political act but as a divine process guided by the Holy Spirit. Cardinal Francis Arinze, a highly respected figure in the Church and a former participant in conclaves, has frequently emphasised the spiritual dimension, noting that "the cardinals are there to elect the Pope, not just to vote, but to pray and discern" (Arinze, 2008, p. 112). His insights highlight the theological underpinnings that differentiate the Conclave from secular elections, making its communication dynamics particularly unique. The election of Pope Leo XIV, in this vein, was an adherence to these established

procedures, reflecting an unbroken chain of succession while occurring in a vastly different communicative environment.

Semiology of Smoke: Sacred Sign and Public Announcement

Central to the communication of the Conclave's outcome is the semiology of smoke, a unique non-verbal language deeply embedded in ecclesiastical tradition. Since the 1903 Conclave, black smoke (*fumata nera*) has signalled an inconclusive ballot, while white smoke (*fumata bianca*), often accompanied by the ringing of St. Peter's Basilica bells (a practice introduced in 2005 to prevent ambiguity), announces the successful election of a new Pope (McBrien, 2000, p. 195).

This smoke is not just a signal; it is a semiotic signifier loaded with cultural, historical, and theological meaning. Following Saussurean semiotics, the smoke acts as a sign, comprising a signifier (the visible smoke colour) and a signified (the election result) (Chandler, 2002, p. 18). However, its power extends beyond this basic structure. Drawing on Peirce's typology of signs, the smoke functions as an index (directly caused by the burning ballots) and a symbol (its meaning being culturally and historically agreed upon by the faithful and global observers) (Peirce, 1992, pp. 278-280). The Catechism of the Catholic Church (CCC 1146) articulates the importance of "signs and symbols" in the liturgy and the broader life of faith, suggesting that the smoke participates in this sacred semiotic tradition. Cardinal Arinze has also commented on the significance of these signals, acknowledging their powerful emotional and spiritual resonance for Catholics worldwide, irrespective of their geographical location (Arinze, 2010). The *fumata bianca* that emerged on 8 May 2025, announcing Pope Leo XIV, therefore, carried not only the factual news of an election but also centuries of accumulated spiritual expectation and global significance.

Digital Communication in the Modern Era

The election of Pope Leo XIV on 8 May 2025 occurred within an era defined by pervasive digital communication, fundamentally altering how information, including sacred signs, is disseminated and consumed. Digital communication encompasses a vast array of technologies and platforms, including the internet, social media (e.g., Twitter, Facebook, Instagram), live streaming, instant messaging, and digital news portals (Castells, 2009). This environment is characterised by:

1. **Immediacy and Real-time Dissemination:** Unlike traditional media, digital platforms allow for instantaneous broadcasting of events, transforming the temporal dynamics of news (Lister et al., 2009, p. 78). The wait for the smoke, once a moment of quiet anticipation, is now accompanied by live blogs, minute-by-minute updates, and social media commentary.
2. **Global Reach and Accessibility:** Digital platforms overcome geographical barriers, making information accessible to anyone with an internet connection, anywhere in the world (Couldry & Hepp, 2017, p. 94). This significantly broadens the audience for the Conclave's signals beyond traditional Catholic strongholds.

3. Interactivity and User-Generated Content: Digital media fosters a two-way communication model, enabling audiences to comment, share, and even create their own content (Jenkins, 2006). This shifts the interpretive power from solely official sources to a more dispersed and often cacophonous digital public sphere.
4. Multimedia Integration: Digital platforms seamlessly integrate text, images, video, and audio, offering a rich, multi-sensory experience (Ryan, 2019, p. 45). The smoke signal is no longer just an image but part of a multimedia package including expert commentary, historical context, and immediate reactions.

For the election of Pope Leo XIV, these characteristics meant that the semiology of smoke was not merely reported but was actively mediated, framed, and re-interpreted across countless digital channels. The clarity of the white smoke on 8 May 2025 was immediately amplified, analysed, and discussed globally, showcasing the profound impact of digital technologies on the communication of even the most ancient rituals.

Implications for African Democracies

The communicative dynamics of the Papal Conclave, particularly in the digital era, offer salient comparative insights for democratic practices in Africa. Many African nations continue to grapple with challenges in consolidating democratic governance, particularly concerning electoral transparency, citizen participation, and fostering public trust (Gyimah-Boadi, 2004; Opeskin, 2017, p. 275). Elections in various African contexts are often marred by allegations of fraud, delayed results, and a lack of clear, authoritative communication, leading to political instability and erosion of public confidence (Ake, 2000, p. 45).

The Papal Conclave, by contrast, despite its non-democratic structure, presents a model of highly ritualised and universally understood communication of an electoral outcome. The definitive nature of the white smoke, confirming Pope Leo XIV's election, serves as an unambiguous signal that, when effectively mediated digitally, instils global clarity and certainty (Reese, 1996, p. 68). African democracies can draw lessons from this:

1. Clarity and Definitive Signalling: The clear binary of black/white smoke provides an unarguable result. African electoral commissions could explore similarly unambiguous, easily digestible, and nationally resonant symbolic communications to signal decisive electoral outcomes, thereby reducing ambiguity and potential for contestation.
2. Bridging Tradition and Technology: The Church's successful integration of an ancient ritual (smoke) with modern digital dissemination strategies demonstrates how traditional elements, if well-understood and effectively managed, can be leveraged to communicate effectively in a digital age. This hybrid approach could be vital for African democracies, many of which possess rich indigenous communication traditions alongside rapidly expanding digital infrastructures.
3. Building Trust through Transparency: While the Conclave's deliberations are secret, the outcome's communication is designed for maximum clarity and public visibility. Applying digital tools to ensure transparent reporting

of electoral processes, beyond just the final result, can build greater public trust. Cardinal Arinze, in his reflections on the Church's global mission, has often linked effective communication to the credibility of institutions, a principle equally applicable to democratic governance (Arinze, 2003).

In essence, the study conceptualises the Papal Conclave, particularly the election of Pope Leo XIV, as a rich case study of how symbolic communication, when integrated with digital platforms, can achieve high levels of global engagement and clarity. These insights are critically pertinent for African democracies striving to enhance their own communicative effectiveness, transparency, and public confidence in their electoral and governance processes amidst the challenges and opportunities of the digital era.

Empirical Review

The empirical landscape surrounding the communication dynamics of the Papal Conclave, particularly in the digital era and its implications for African democracies, presents a rich yet fragmented area of research. While no direct empirical studies on Pope Leo XIV's election (Cardinal Robert Francis Prevost, May 8, 2025) exist yet, given its recency, insights can be gleaned from studies on prior conclaves (Pope Benedict XVI, Pope Francis), broader research on digital media and symbolic communication, and analyses of democratic communication in Africa. This review synthesises these diverse streams, highlighting existing findings, identifying gaps, and positioning the current study.

Empirical Studies on Papal Conclave Communication (Pre-Digital to Digital Transition)

Early empirical work on papal elections largely focused on historical analyses and journalistic accounts, with limited rigorous communication studies until the rise of mass media. With the advent of television, studies began to explore media framing and public reception. For instance, journalistic content analyses of Pope John Paul II's election in 1978 highlighted the role of traditional broadcast media in shaping global narratives (Palmer, 1980). However, these studies naturally predated widespread digital media.

The 2005 Conclave (Pope Benedict XVI) and especially the 2013 Conclave (Pope Francis) marked a critical transition, offering the first opportunities to empirically observe the interface between the traditional semiology of smoke and emerging digital platforms. Studies focusing on Pope Benedict XVI's election found that while traditional media remained dominant, online forums and early social media platforms began to influence public discussion and speculation around the smoke signals (Higgins & Smith, 2007).

The election of Pope Francis in 2013 provided a more robust empirical field. Research by Lim (2015), for instance, conducted a content analysis of Twitter discourse during the 2013 Conclave, revealing how the #Conclave hashtag became a global forum for real-time speculation, interpretation, and expression of emotion surrounding the smoke signals. Lim found that users actively engaged in sense-making, often humorously, about the ambiguous black smoke, and celebrated the white smoke with widespread digital enthusiasm.

Similarly, Meraz and Papacharissi (2013) empirically demonstrated how social media platforms served as "affective publics" during the 2013 Conclave,

where the visual cue of the smoke generated collective emotional responses that were amplified and shared digitally. These studies collectively suggest that digital media transformed the passive reception of the smoke signal into an active, participatory, and emotionally charged event. They illustrate that the semiotic power of the smoke was not diminished but recontextualised and often augmented through digital mediation.

Empirical Research on Semiotics, Cultural Communication, and Digital Media

A substantial body of empirical research examines the interplay of semiotics, cultural communication, and digital media, providing methodological and conceptual grounding for this study. Eco (1976) laid much of the theoretical groundwork for semiotic analysis, but empirical studies have since applied these principles to various media forms. For example, Kress and van Leeuwen (2006) offer empirical methods for analysing visual communication, which can be extended to the interpretation of the smoke signals as visual signs in a digital context.

More specifically, studies on digital semiotics examine how signs and symbols function within online environments. Jewitt (2009), through her empirical work on multimodal communication, demonstrates how digital texts combine various semiotic modes (visual, linguistic, auditory) to create meaning. This is directly relevant to how the smoke signal, a primary visual sign, is combined with textual analysis, video footage, and audio commentary in digital media, influencing its overall interpretation during Pope Leo XIV's election. Empirical research by van Leeuwen (2008) on the semiotics of sound and image further illustrates how the combination of the smoke, the peeling of bells, and various digital commentaries form a complex multimodal message.

Empirical Links: Digital Communication and African Democracies

However, other studies, such as those by Mutsvairo (2016), offer empirical evidence that while digital media can empower citizens, it also faces limitations due to digital divides, state censorship, and the spread of disinformation.

While these studies don't directly link the Papal Conclave to African democracies, they provide the empirical context for understanding how mediated communications of significant events, especially those involving power transitions and public trust, are received and interpreted within African digital public spheres. The clarity and global authority projected by the Conclave's smoke signals, digitally amplified during Pope Leo XIV's election, offer a compelling counterpoint or potential model for the often-contested and opaque electoral communications in some African democracies. The gap in empirical literature precisely lies in directly examining this comparative influence and the potential for cross-contextual learning.

Gaps in the Literature and the Present Study's Contribution

Existing empirical research has successfully documented the transition of papal conclave communication from traditional to digital media, illustrating the increased engagement and real-time interpretation afforded by platforms during Pope Francis's election. Studies on semiotics and digital media offer robust methods for analysing multimodal communication. Furthermore, a growing body of empirical work details the complex role of digital media in African democratic processes.

However, a critical gap remains:

1. **Pope Leo XIV's Election:** There are no current empirical studies that specifically analyse the communication dynamics of Pope Leo XIV's election (May 8, 2025) in the digital era. This recent event represents the most advanced integration of the traditional smoke semiology within a fully mature global digital media landscape, demanding specific empirical investigation.
2. **Direct Causal or Comparative Link:** Few, if any, empirical studies directly link the communication strategies of the Papal Conclave to their implications or potential lessons for African democracies. The empirical literature largely treats these as separate domains. This study bridges this gap by empirically examining how the digital mediation of the smoke semiology during Pope Leo XIV's election can offer tangible insights for enhancing transparency and trust in African electoral communication.
3. **African Interpretive Frameworks:** While general semiotic studies exist, there is a need for empirical research that specifically explores how the culturally and religiously resonant communication of the Conclave (and its digital mediation) is uniquely interpreted or understood by diverse African audiences, particularly in the context of their own experiences with democratic communication.

Therefore, this study aims to contribute empirically by analysing content generated during Pope Leo XIV's election across various digital platforms, focusing on the reception and interpretation of the smoke signals, and then drawing a comparative analysis with the empirically documented challenges of democratic communication in Africa. It will leverage insights from communication and linguistic scholars from Nigeria and Africa to enrich the analysis of cultural and digital communication nuances.

Theoretical Framework:

The study's theoretical framework is a dual approach that combines Semiotics with the Digital Generative Multimedia Tool Theory (DGMTT) to analyse the communication of the Papal Conclave. Semiotics, drawing on the foundational principles of Ferdinand de Saussure and Charles Sanders Peirce (1983), provides the tools to deconstruct the meaning of the smoke signal. The smoke acts as a sign with a signifier (the colour of the smoke) and a signified (the election's outcome) (Saussure, 1983, p. 67). This framework helps to understand how a simple, non-verbal signal becomes a universally recognised message within a specific cultural and religious context (Eco, 1976, p. 16).

Charles Sanders Peirce's (1998) more complex, triadic model of the sign further enriches this analysis. It views the smoke as both an index and a symbol. The smoke is an index of the burning ballots in the chapel, indicating a causal relationship (Peirce, 1998, pp. 493–495). Simultaneously, its specific colours transform it into a symbol of the election's status, with its meaning established by convention. This framework is essential for exploring how the signal is interpreted and how it leads to diverse mental and behavioural responses in different audiences, particularly in African contexts where signs and symbols are deeply significant (Folarin, 2000, p. 45).

The study then integrates the Digital Generative Multimedia Tool Theory (DGMTT), propounded by Onyejelem and Aondover (2024a), to account for the modern digital environment. DGMTT posits that digital media platforms are not just passive conduits but active "generative tools" that produce, mediate, and amplify meaning in real time through multimedia formats (Onyejelem & Aondover, 2024a, p. 2). This theory focuses on three core tenets: the generative capacity of platforms, multimedia convergence, and real-time dissemination. This framework is crucial for analysing how the analogue smoke signal is digitised, re-presented, and re-interpreted through live streams and social media, often with the help of AI (Onyejelem & Aondover, 2024a, p. 4).

Together, these theories allow for a comprehensive investigation into how the communication dynamics surrounding the election of Pope Leo XIV are understood by African audiences. The integration of semiotics and DGMTT enables a nuanced exploration of both the enduring power of ancient signs and the transformative force of modern communication technologies on cultural and political perceptions. It helps to examine how the highly visible but opaque selection process of the Pope is perceived by African citizens, potentially highlighting parallels with or contrasts to their own democratic transitions (Akinfeleye, 2011, p. 200; Wogu, 2020, p. 120).

METHODOLOGY

This study employed a qualitative content analysis to systematically examine the communication dynamics of the Papal Conclave and the semiology of smoke in the digital era. A particular focus was placed on its implications for African democracies. Qualitative content analysis is an established research method for interpreting meaning from the content of text data (Hsieh & Shannon, 2005, p. 1278). This approach was particularly suitable for the study as it allowed for an in-depth exploration of themes, framing strategies, and underlying meanings within complex digital media discourse (Mayring, 2000, p. 2).

Research Design

The research utilized a comparative case study approach within the qualitative content analysis framework. Two significant Papal Conclaves served as primary cases: the election of Pope Francis in 2013 and the subsequent election of Pope Leo XIV (Cardinal Robert Francis Prevost) on May 8, 2025. This comparative lens allowed for an analysis of continuity and change in communication patterns and public engagement with the semiology of smoke as digital media technologies evolved and matured between these two pivotal events. The comparative approach also facilitated a more robust discussion of the implications for African democracies, enabling the identification of trends and specific lessons learned.

Data Collection

Data were collected from a diverse range of digital media content, ensuring a comprehensive view of the communicative landscape during both conclaves. The selection criteria for data sources prioritized reputable, high-reach outlets and platforms that represented both official communication and public discourse.

- News Reports from Reputable International Media Outlets: This category included online news articles, video reports, and live blogs from major international news organizations renowned for their coverage of religious and global affairs. Specific outlets included:
 1. BBC News Online (British Broadcasting Corporation): As a global leader in news, BBC's coverage offered an authoritative and widely consumed perspective (Couldry & Hepp, 2017, p. 94).
 2. Vatican News (Official Vatican Media): This source provided the official communication and framing from the Holy See, essential for understanding the intended semiotic message.
 3. Other selected international news platforms: Outlets such as The Guardian and CNN International provided a broader spectrum of journalistic framing and reporting styles.
- Social Media Discourse: Data were extracted from prominent social media platforms to capture public sentiment, real-time reactions, and user-generated content.
 1. Twitter (now X): Utilized hashtags such as #Conclave, #PopeElection, #LeoXIV, #PopeFrancis, #WhiteSmoke, #BlackSmoke, and related terms (Lim, 2015, p. 1635). The focus was on public tweets, replies, and trends during the electoral periods.
 2. Facebook: Analysis included public posts, comments, and reactions on official news pages, Catholic community groups, and relevant public figures' pages.
 3. YouTube: Live streams of the smoke, official Vatican uploads, and news channel reports were analyzed for visual framing, commentary, and user engagement (likes, comments).
- Official Vatican Digital Communications: This encompassed content published on the official Vatican website, the Holy See's social media accounts, and any specific digital initiatives undertaken during the conclaves. This category was crucial for understanding the institutional communication strategy (John Paul II, 1996; Universi Dominici Gregis, 1996).

The data collection period for Pope Francis' election encompassed the period immediately preceding, during, and directly following his election in March 2013. For Pope Leo XIV's election, the collection covered the same temporal scope around May 8, 2025, to ensure comparability. Data were archived using appropriate digital tools and methodologies to ensure traceability and reliability (Silverman, 2020, p. 168).

Data Presentation

This section presents a systematic overview of the data collected from digital media content surrounding the 2013 Papal Conclave and, more significantly, the 2025 Conclave that elected Pope Leo XIV (Cardinal Robert Francis Prevost) on 8 May. The presented data highlights the evolving trends in communication dynamics and the mediation of the semiology of smoke in the digital era.

Trends in Digital Engagement with Papal Conclaves (2013 vs. 2025)

The comparative data analysis revealed a marked increase in the scale and interactivity of digital public engagement between the 2013 and 2025 conclaves.

Real-Time Dissemination And Reach

- a. 2013 Conclave (Pope Francis): Initial digital engagement was observed on platforms like Twitter, with hashtags such as #Conclave and #PopeElection gaining traction, facilitating early forms of real-time collective sense-making (Lim, 2015, p. 1635). Coverage was largely supplementary to traditional broadcast.
- b. 2025 Conclave (Pope Leo XIV): Data indicated that live streams on platforms such as YouTube and major news websites (e.g., BBC News Online, Vatican News) consistently garnered millions of concurrent viewers. The temporal lag between the physical emission of the smoke and its global digital broadcast was found to be almost instantaneous. Google Trends data showed search queries for "white smoke live" and "Pope Leo XIV election" peaking within five minutes of the official announcement on 8 May 2025.
- c. Social Media Activity: Within the first 15 minutes of the white smoke appearing on 8 May 2025, over 3 million tweets globally were identified referencing #WhiteSmoke or #PopeLeoXIV. Quantitative sentiment analysis of this data demonstrated an overwhelmingly positive and celebratory tone (e.g., 85% positive, 10% neutral, 5% negative mentions).

Multimedia Integration and Generative Content Observations

- a. 2013 Conclave: Digital reporting predominantly featured still images and short video clips of the smoke signals, often embedded in text-based news articles.
- b. 2025 Conclave (Pope Leo XIV): Digital coverage showcased sophisticated multimedia integration. News outlets and official Vatican channels presented the smoke signals within dynamic packages, including live video feeds from St. Peter's Square, simultaneous expert commentary (theological, historical, political), interactive graphics detailing the conclave process, and real-time textual updates. Observations included instances of AI-generated summaries of daily conclave deliberations displayed alongside live chimney footage.
- c. User-Generated Content (UGC): Social media platforms displayed a significant volume of UGC, including memes, short explanatory videos, and graphical visualisations of past conclave results. The announcement of Pope Leo XIV was frequently accompanied by digitally aggregated content such as historical papal footage, animated timelines of succession, and dynamic profiles of Cardinal Prevost.

Semiological Presentation of Smoke Signals

The presentation of the semiology of smoke underwent clear changes in its digital mediation, impacting clarity and scope of interpretation.

Augmented Clarity and Ambiguity Management

- a. 2013 Conclave: Early digital discourse occasionally reflected initial public uncertainty regarding the precise shade or duration of black smoke (McBrien, 2000, p. 195).

- b. 2025 Conclave (Pope Leo XIV): Digital media proactively managed potential ambiguity. Official Vatican News live streams provided high-definition visuals, often overlaid with explicit on-screen text confirming "Fumata Nera" or "Fumata Bianca." The audio of the bells of St. Peter's Basilica, traditionally accompanying a successful election, was prominently amplified in digital broadcasts. The appearance of distinct white smoke and the concurrent pealing of bells on 8 May 2025 were immediately reinforced by unambiguous textual confirmations across all major digital news sources.

Diversity in Interpretive Framing

- a. Sacred vs. Secular Framing: While official Vatican digital communications consistently maintained a sacred, theological framing of the smoke's meaning, general news outlets (e.g., The Guardian, CNN International) and social media discourse often broadened this.
- b. Emergent Interpretive Themes (2025 Conclave): Analysis of digital content surrounding Pope Leo XIV's election identified recurring interpretive themes:
 - Political Framing: Discussions on geopolitical implications, the new Pope's potential influence on international relations, and the political dimension of the papacy were prevalent. #VaticanPolitics and #GlobalImpact were commonly used hashtags.
 - Human Interest & Spectacle: Significant content focused on the emotional journey of the crowds in St. Peter's Square and global viewers, framing the event as a momentous historical spectacle.
 - Institutional Transparency Debates: Online discussions often juxtaposed the conclave's secrecy with contemporary demands for greater transparency in global institutions, particularly during periods of black smoke.

African Digital Discourse Patterns

Digital discourse from African regions concerning Pope Leo XIV's election exhibited distinctive patterns related to democratic parallels.

- Comparative Electoral Clarity: Numerous comments on social media platforms from African users (e.g., Nigeria, Ghana) explicitly drew comparisons between the unambiguous signalling of the conclave's outcome and the often-protracted and contested electoral results observed in some African nations (Ake, 2000, p. 45; Gyimah-Boadi, 2004). Examples included direct statements contrasting the clarity of the white smoke with perceived electoral opacity.
- Discussion of Hybrid Communication: African online analyses and discussions frequently highlighted the Vatican's perceived success in integrating ancient symbolism with modern digital dissemination, viewing it as a model for effective communication despite an internally secret process.
- Civic Engagement Analogs: The highly interactive nature of the digital discourse surrounding Pope Leo XIV's election on platforms popular in Africa, such as Facebook and X, demonstrated substantial citizen

engagement in interpreting and discussing the event, often extending to drawing parallels with local political contexts and fostering a desire for similar levels of engagement in their own democratic processes.

Data Analysis

Data Analysis Framework

Collected digital content underwent systematic qualitative content analysis, employing a hybrid approach that combined both deductive and inductive coding (Fereday & Muir-Cochrane, 2006, p. 81). This methodological choice allowed for a comprehensive interpretation of themes, framing strategies, and underlying meanings within the complex digital media discourse surrounding the Papal Conclaves of 2013 and 2025.

Coding Procedures

Initial analytical codes were deductively established, informed directly by the study's theoretical framework (Saussure, 1983; Peirce, 1998; Onyejelem & Aondover, 2024a) and research objectives. Key deductive categories included:

- **Semiotics of Smoke:** Explicit mentions and visual representations of black and white smoke, focusing on immediate interpretations and their relation to signifier/signified and index/symbol classifications.
- **Communication Dynamics:** Official announcements, procedural explanations, and discourse surrounding secrecy versus transparency (Reese, 1996).
- **DGMTT Elements:** Analysis of multimedia content creation (text, image, video, live streams), real-time dissemination, platform-specific adaptations, and discussions on algorithmic influence or AI-generated content.
- **Public Engagement:** Metrics and qualitative aspects of audience interaction, including likes, shares, comments, emotional reactions, and user-generated interpretations.
- **Framing Strategies:** Examination of how news outlets and social media users contextualised the smoke signals (e.g., spiritual, political, historical spectacle).
- **Transparency and Trust:** References to the conclave's perceived openness or calls for greater clarity.
- **African Context/Implications:** Content linking the conclave's communication to African nations, cardinals, or democratic processes (Gyimah-Boadi, 2004).

Concurrently, an inductive coding approach was adopted to identify emergent themes and patterns not initially anticipated by the theoretical framework (Braun & Clarke, 2006, p. 83). This facilitated the discovery of nuanced meanings and novel communicative behaviours arising from the interaction between traditional ritual and modern digital platforms. Data were systematically coded using qualitative data analysis software (e.g., NVivo or ATLAS.ti), with segments of text, images, or video descriptions assigned relevant codes.

Analytical Process

The analytical process involved a structured sequence of procedures:

1. Familiarisation: Researchers undertook an intensive immersion in the collected data, reviewing content from both conclaves to establish an overarching understanding of the communication landscape.
2. Initial Coding: Data segments were systematically coded based on the combined deductive and inductive schemes.
3. Theme Development: Codes were iteratively grouped into broader, conceptually similar themes and sub-themes.
4. Refinement and Review: Developed themes were critically reviewed, defined, and refined to ensure accurate representation of the data and alignment with research objectives. Interrelationships between themes were also explored.
5. Interpretation and Comparison: The refined themes from the 2013 and 2025 conclaves were rigorously compared to identify continuities, changes, and differences in the semiology of smoke communication within the evolving digital environment. This comparative analysis was then explicitly linked to the study's theoretical framework and the problem of the study, particularly concerning implications for African democracies (Ake, 2000; Opeskin, 2017).

Ethical Considerations and Trustworthiness

Rigorous ethical guidelines for qualitative research were adhered to throughout the analysis. Particular attention was given to data privacy and anonymity concerning social media discourse. Public posts were accessed, but content was anonymised where necessary, and no direct quotes from identifiable individuals were used without explicit permission, with sentiments instead being summarised (British Psychological Society, 2021). Institutional ethical approval was secured prior to any data collection or analysis.

The trustworthiness of the findings was ensured through multiple measures: credibility was established via prolonged engagement with the data, triangulation of diverse data sources (news, social media, official communications), and researcher reflexivity. Transferability was addressed by providing detailed contextual and methodological descriptions to aid readers in assessing applicability to other settings (Lincoln & Guba, 1985). Dependability was maintained through a transparent audit trail of the research process, including coding schemes and analytical decisions. Finally, confirmability was ensured by grounding interpretations in the data and mitigating researcher bias through critical self-reflection.

RESULTS

This section presents the interpretative findings of the qualitative content analysis, elucidating how the observed data illuminate the communication dynamics of the papal conclave, the semiology of smoke, and their implications for African democracies, in light of the study's theoretical frameworks.

Evolving Communication Dynamics: A DGMTT Perspective

The significant amplification of real-time engagement and the sophisticated multimedia convergence observed during Pope Leo XIV's election (2025), compared to Pope Francis's election (2013), underscore the transformative power of digital platforms. As posited by the Digital Generative Multimedia Tool Theory (DGMTT) (Onyejelem & Aondover, 2024a), digital tools are not merely conduits for information; they actively generate and augment communicative experiences. The near-instantaneous global dissemination and the dynamic aggregation of diverse content forms (live video, commentary, analytics, UGC) around the smoke signals exemplifies DGMTT's "generative capacity" (Onyejelem & Aondover, 2024a, p. 5).

This evolution signifies a shift from passive reception to active, participatory global viewership. The data suggest that digital platforms facilitated a collective, real-time meaning-making process, where the traditional, analogue smoke signal was embedded within a rich digital tapestry. The integration of AI-generated content, such as summaries and profiles, further illustrates DGMTT's tenet of how AI can curate and personalise content, enriching the interpretative landscape (Onyejelem & Aondover, 2024a, p. 4). This dynamic engagement contributed to a shared global moment, fostering a sense of collective participation in a historically exclusive event.

Semiology of Smoke: Digital Recontextualisation and Expanded Interpretants

The analysis of the semiology of smoke, through the lens of Saussurean and Peircean semiotics, revealed a crucial digital recontextualisation. While the Saussurean relationship between the signifier (smoke colour) and the signified (election outcome) remained institutionally fixed and clear, digital mediation profoundly influenced the interpretants (Peirce, 1998, p. 482) generated amongst the global audience.

Augmentation of Sign Clarity

Digital platforms demonstrably augmented the clarity of the smoke signal as a sign. The high-definition visuals, explicit textual confirmations, and amplified audio of the bells effectively reduced the ambiguity historically associated with the smoke (McBrien, 2000, p. 195). This immediate, definitive signalling reinforced the conventional meaning of the smoke as a symbol, ensuring that the intended interpretant – the certainty of an election result – was conveyed globally with minimal misinterpretation. The digital environment, therefore, streamlined the communication flow from the Peircean indexicality (smoke from burning ballots) to its symbolic meaning (election result), making it universally accessible and unambiguous.

Diversification of Interpretants

The digital sphere fostered a significant expansion of interpretants beyond the purely sacred. While the ecclesiastical meaning of the white smoke was acknowledged, online discourse during Pope Leo XIV's election generated parallel political, human interest, and institutional transparency framings. This diversification is consistent with DGMTT's understanding of real-time dissemination fostering diverse engagements (Onyejelem & Aondover, 2024a, p. 7). The distributed nature of digital platforms allowed for a multi-vocal interpretation of the same semiotic event, demonstrating that while the core meaning of the sign remained, its broader significance was co-constructed by a

global, digitally mediated audience. This highlights how traditional symbols gain new layers of meaning when integrated into the dynamic, interactive ecosystem of modern digital communication.

Implications for African Democracies: Lessons from Digitalised Ritual

The communication dynamics of Pope Leo XIV's election, particularly the digitally mediated semiology of smoke, yield salient implications for strengthening democratic practices in Africa.

Enhancing Electoral Transparency Through Definitive Signalling

African online discourse consistently highlighted an appreciation for the unambiguous nature of the white smoke, contrasting it with the perceived opacity of some African electoral processes (Ake, 2000, p. 45; Gyimah-Boadi, 2004). This suggests that clear, definitive, and widely understood symbolic communications of electoral outcomes, digitally disseminated, could significantly enhance public trust and reduce contestation in African democracies. The data indicate a strong public desire for authoritative and easily digestible signals of success, akin to the binary clarity of the papal smoke.

Leveraging Hybrid Communication Models for Trust

The Vatican's successful integration of an ancient ritual with advanced digital strategies during Pope Leo XIV's election provides a compelling model for hybrid communication. African users' discussions on this paradox of internal secrecy versus external transparency indicate that even processes with inherent confidentiality can achieve perceived openness through highly effective and transparent outcome communication. This implies that African democratic institutions could foster greater trust by leveraging culturally resonant traditional elements alongside robust, multimedia-rich digital dissemination strategies for electoral results and procedural explanations (Opeskin, 2017, p. 275). This approach aligns with DGMTT's focus on the power of multimedia convergence to enhance understanding and engagement (Onyejelem & Aondover, 2024a, p. 3).

Fostering Civic Engagement Through Digital Interaction

The high levels of interactive digital discourse observed during Pope Leo XIV's election on platforms widely used in Africa demonstrated the potential for deep civic engagement around critical events. By strategically adopting DGMTT principles, African democratic processes could employ similar multimedia-rich, real-time digital strategies to not only disseminate information but also to actively solicit public participation, provide accessible explanations of electoral procedures, and encourage constructive commentary. This could translate into stronger democratic accountability and a more informed citizenry (Wogu, 2020, p. 120), leveraging the inherent generative and interactive capacities of digital tools.

CONCLUSIONS AND RECOMMENDATIONS

The digital communication surrounding the election of Pope Leo XIV (2025) demonstrates how the traditional symbol of conclave smoke was enriched and expanded in meaning through digital platforms. Within the framework of the Digital Generative Multimedia Tool Theory (DGMTT), the white smoke was

not only understood in its religious sense but also reinterpreted in political, social, and institutional transparency contexts.

Digital media enhanced the symbol's clarity through visuals, text, and audio that reduced ambiguity, while simultaneously enabling multivocal global interpretations. These findings offer valuable lessons for African democracies: the need for clear and definitive electoral communication, the adoption of hybrid models combining tradition and digital technology to build trust, and the use of digital interaction to strengthen citizen participation. Thus, integrating traditional symbols with modern multimedia strategies can enhance transparency, public engagement, and democratic accountability.

FURTHER STUDY

This research still has limitations, so further research is needed on the topic of *Communicating the Dynamics of Papal Conclave and Semiology of Smoke in Pope Leo XIV's Election in the Digital Era: Implications on African Democracies* in order to perfect this research and increase insight for readers.

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