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RECONCEPTUALIZING GENRE ANALYSIS IN THE DIGITAL EPOCH: A METHODOLOGICAL INVESTIGATION INTO THE SYMBIOSIS OF RHETORICAL INTERPRETATION, CORPUS LINGUISTICS, AND EXPLAINABLE ARTIFICIAL INTELLIGENCE

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Abstract

Genre Analysis has undergone considerable theoretical and methodological changes during the last four decades. Originally formulated within the realm of English for Specific Purposes (ESP) to study rhetorical organization and communicative purposes, Genre Analysis has been increasingly moving beyond traditional linguistic boundaries and developing into a genuinely interdisciplinary approach, which includes such branches as corpus linguistics, computational linguistics, Natural Language Processing (NLP), and AI. Based on a structured Google Scholar search and selection criteria, this review critically analyses five recent studies that together present this methodological development of Genre Analysis. Two papers exemplify the human-centered paradigm of Genre Analysis and use rhetorical interpretation, discourse analysis, and corpus-assisted qualitative analysis to study novel academic and institutional genres. Three remaining papers are based on the computational methodology of topic modelling, machine learning, and multidimensional genre analysis and analyze genres using automated language pattern detection. Combining all five papers, this review will demonstrate how Genre Analysis is gradually shifting towards computational methods while still being based on traditional linguistic theories. While not substituting the old linguistic methods, the computational ones supplement them with empirical scalability. Thus, the current review provides the conceptual framework in which corpus linguistics becomes the methodological tool to combine human interpretation and computational modelling. The review suggests that the future of Genre Analysis lies in the development of hybrid Human-AI methodologies of rhetoric and explainable artificial intelligence. Finally, the paper highlights key future trends and research directions in genre theory, corpus linguistics, ESP pedagogy, and AI-driven discourse analysis.

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1. INTRODUCTION

Genre Analysis has gained prominence in applied linguistics as one of the most popular ways to study the linguistic organization of communication serving some communicative aims in specific academic, social, and professional environments. In recent decades, after the emergence of the notion of genre at the end of the twentieth century, the notion of genre was broadened from the classification of recurring texts to that of socially situated communicative acts formed in certain discourse communities, institutions, and cultures (Miller, 1984). It has resulted in the emergence of Genre Analysis as an important field of study in academic, ESP, and discourse studies, professional communication, corpus linguistics, and recently in computational linguistics and Artificial Intelligence (AI) (Miller, 1984; Swales, 2004; Hyland, 2008).

The origins of Genre Analysis in modern times have been greatly inspired by John Swales (1990), who, coming from the ESP tradition, defined the concept of genre as a communicative event in which there are communicative purposes recognizable in discourse communities. According to this perspective, genres are not identified by linguistic characteristics alone; they are identified by their communicative functions performed in specialized communities. The later move-analysis approach used to analyze academic and professional discourse has been derived from this approach. Genre-based research has also continued to influence academic writing, where disciplinary conventions guide writers in organizing and communicating knowledge within the academic community (Hyland, 2008; Starfield, 2016). The ESP tradition was later extended to academic and professional settings, where genre knowledge helps writers understand how to meet the discipline's demands and achieve their communicative goals (Hyland, 2004). Following this tradition, Bhatia (1993, 2004) used Genre Analysis to explore professional, business, legal, and institutional discourse, stressing that the analysis of genres must involve not only linguistic conventions but also professional practices.

In addition to the ESP tradition, Miller's (1984) Rhetorical Genre Studies (RGS) established the socio-rhetorical approach to genres, defining them as social actions and not as simply recurring textual structures. Genres arise when discourse communities face recurrent communicative situations and create conventional rhetorical actions as responses to them. Bazerman (1994) contributed to this approach with such concepts as genre systems and genre sets, paying attention to the interrelated nature of communicative actions in institutions and professional communities. Taking together, these traditions established Genre Analysis as fundamentally interpretive in nature, requiring rhetorical judgement and expert linguistics (Miller, 1984; Devitt, 2015).

The development of corpus linguistics brought a new methodological approach to genre research through frequency analysis, keyword analysis, collocation, concordance, and lexical profiling (Biber et al., 1998). Such techniques provided a reliable quantification of patterns that could depend only on the intuitions of the researcher in some cases. The use of corpus-informed methods did not imply neglecting rhetorical interpretation but was aimed at strengthening it by linking patterns of language use to qualitative explanations of communicative purposes and discourse organization. Thus, corpus linguistics became a kind of methodological bridge between human-oriented Genre Analysis and other computational approaches (Biber, 1995; Biber & Conrad, 2019; Conrad, 2002; McEnery & Hardie, 2012).

The recent progress in Natural Language Processing (NLP), machine learning, transformer-based models, and Artificial Intelligence (AI) techniques contributed to the development of methodology in this field. Computational techniques can analyze extensive corpora and find lexical, syntactic, semantic, and discourse patterns. Topic modeling can reveal thematic structures of the data, machine-learning algorithms can classify texts by several linguistic characteristics, and explainable-AI solutions attempt to make decision-making of computational models interpretable. All these developments have made Genre Analysis move from rhetorical interpretation of the text to automatic genre modeling of texts while also

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raising questions of validity and transparency of the results (Brown et al., 2020; Rogers et al., 2020; Vaswani et al., 2017).

It is worth noting that computational solutions do not replace genre theory. Concepts such as communicative purposes of the texts, discourse communities, rhetorical moves, and social actions are crucial for the interpretation of the computational results. Computer systems can reveal regularities in the corpora, but they need linguistic and sociocultural interpretation. Contemporary Genre Analysis is thus characterized by methodological convergence when qualitative and computational approaches complement each other (Devitt, 2015; Swales, 2004).

The development of digital communication media, generative AI, and multimodal discourse has contributed to an even wider range of genres that are open for exploration. Increasingly, AI-written academic texts, research project websites, social media communication, online news, and other digitally mediated genres illustrate the issues of genre hybridity, technological mediation, and fluidity. As a result, such phenomena challenge the traditional understanding of genre construction and recognition, hence calling for the re-evaluation and innovative approach to genres (Bhatia, 2014; Hyland, 2015).

In this context, the current paper critically reviews five recently published contemporary articles found using Google Scholar and selected based on the predetermined criteria of relevance. The chosen articles investigate a wide array of genres and methods, such as European research-project websites, ChatGPT-related research abstracts, movie plot summaries, written genres through machine learning, and news genres through multidimensional modeling. Collectively, they can serve as a foundation for comparing human-centered rhetorical Genre Analysis with its increasing computational approaches.

Instead of viewing the approaches discussed as rival paradigms, the paper suggests considering contemporary Genre Analysis as an interdisciplinary continuum evolving from the human-centered interpretation through the corpus-informed analysis up to computational analysis and AI-assisted Genre Analysis. Based on this approach, the selected articles are evaluated based on their theoretical orientation, methodology, major findings, and contributions to identify the trends and future research directions in the area. The paper concludes that the future of Genre Analysis is likely to involve hybrid human-AI methodologies, combining linguistic and rhetorical expertise with corpus-based computational analysis. Such a combination will not only allow identifying the linguistic patterns of specific genres but also explaining their evolution under different conditions (Biber & Conrad, 2019; Devitt, 2015; McEnery & Hardie, 2012).

2. Conceptual Framework

The conceptual framework of this literature review comprises a unique model of the methodological development of Genre Analysis over four successive and connected stages discovered by the author in the reviewed literature. The first stage is founded upon the ESP and RGS traditions and represents a traditional, human-oriented methodology, with its focus on communicative purposes, rhetorical structure, discourse communities, and socially embedded genre practice. The second stage includes the use of corpus linguistics as a methodological link between qualitative interpretation and empirical evidence, based on frequency, collocation, keyword, and concordance analysis. The third stage stands for the emergence of computational Genre Analysis, in which machine learning, NLP, topic modelling, and artificial intelligence allow for large-scale classification, automated identification, and modelling of genre features. The fourth stage is marked by the increased use of computational methods in conjunction with human expertise in linguistics, rhetoric, and context, especially in cases when the output of the computational analysis needs to be interpreted and explained. In other words, the four stages are structured based on increasing computational mediation, but with continuity to the established genre theory (Biber, 1995; Miller, 1984; Swales, 2004).

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3. Review Methodology

This review is conducted using a qualitative narrative review method that is based on the selection, critical evaluation, and comparative synthesis procedures. Instead of performing a quantitative meta-analysis, the review critically assesses the theoretical frameworks, analytical methods, methodological approaches, findings, and contributions of five studies that have dealt with current advances in Genre Analysis. A narrative review is suitable for summarizing methodological changes, conceptual advances, and findings in related fields of research (Grant & Booth, 2009).

The studies were retrieved by searching Google Scholar from [insert exact starting date] to [insert ending date]. The following key terms were used in the search, combined in various ways: "Genre Analysis," "corpus-based Genre Analysis," "computational Genre Analysis," "Genre Analysis and machine learning," "Genre Analysis and topic modelling," and "Genre Analysis and NLP." The following criteria were used to select studies:

1. Relevance: The study needed to take up Genre Analysis or genre classification or genre modelling as a substantive research focus.

2. Methodological basis: The study must have been conducted using a known linguistic, corpus-based, rhetorical, or computational methodology.

3. Methodological variation: The studies selected were required to show a methodological variation between the human-centered rhetorical approaches and computational methods, including topic modelling and machine learning.

4. Modern relevance: Scholarly studies of recent developments in academic, institutional, cultural or digital genres were preferred.

Studies were excluded if (a) the genre was not referred to explicitly, (b) there was not enough methodological information provided, or (c) the study did not contribute to the substantive development of methodological research in Genre Analysis. Based on this, five studies were selected for methodological and conceptual representation: Bonsu and Adusei (2023), Mur Dueñas (2023), Matthews and Glitre (2021), Vicente et al. (2021) and Lin et al. (2023).

The articles were read several times, either in their journal, conference, publisher, or academic repository versions. The studies were analyzed from the following perspectives: (1) research purpose, (2) theoretical framework, (3) methodology, (4) key findings, (5) contribution to Genre Analysis, and (6) methodological and conceptual limitations. These views served as a starting point to compare individual studies and to detect methodological consistency, differences, and developments. The studies were then divided into two general analytical approaches: Human-Centered Genre Analysis and Computational Genre Analysis. Finally, comparative synthesis was performed to find methodological patterns, theoretical considerations, new developments, and future directions for research. The review does not view human-centred and computational approaches as mutually exclusive methods, but rather as complementary, and sees how computational methods can enhance the empirical scope and scalability of Genre Analysis, while human interpretation is necessary to explain the linguistic, rhetorical, and contextual significance of the computational results.

The selected studies, their publication year, genre/data, methodological approach, and analytical orientation are summarized in Table 1.

Table 1: Characteristics of the Selected Studies

ARTICLE	YEAR	GENRE/DATA	METHOD	ANALYTICAL ORIENTATION
BONSU & ADUSEI	2023	72 research-article abstracts	Corpus-based analysis + move analysis	Human-centered

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MUR DUEÑAS	2023	Research-project websites	Genre/move analysis	Human-centered
MATTHEWS & GLITRE	2021	Movie plot summaries	Unsupervised topic modelling	Computational
VICENTE ET AL.	2021	News, tales, and reviews	NLP + machine learning	Computational
LIN ET AL.	2023	News items	NLP + machine learning	Computational

The selected studies fall into two general methodological approaches, as illustrated in Table 1: human-centered and computational. The first two studies focus on rhetorical and genre analysis, while the other three studies use computational methods including topic modelling, NLP, and machine learning.

4. Evolution of Genre Analysis: From Human-Centered to Computational

Firstly, the methodology of Genre Analysis has changed significantly in the last four decades, from rhetorical qualitative interpretation to a combination of corpus linguistics, computational linguistics, and artificial intelligence. This paradigm shift is indicative of the changes that occurred in applied linguistics and in digital language research in general. While early Genre Analysis was mainly based on close textual analysis to define rhetorical structures and communicative purposes, nowadays, researchers prefer using computational methods to identify linguistic patterns in large corpora. However, this change should not be considered as a rejection but rather as an expansion of Genre Theory (Biber, 1995; Biber & Conrad, 2019; Devitt, 2015; McEnery & Hardie, 2012).

The foundations of Genre Analysis were established in the sphere of ESP by the works of Swales (1990), who conceptualized genres as communicative events with common purposes in discourse communities. Further research has shown that the identification of genres based on communicative purpose alone is not as simple as it seems and that there is a need to take textual and contextual evidence into account when identifying genres (Askehave & Swales, 2001). Thus, his move-analysis technique allows defining recurrent rhetorical structures in professional and academic texts. In ESP research, Genre Analysis has been moving beyond traditional academic texts to professional, institutional, and digitally mediated genres (Paltridge, 2013).In parallel, Miller (1984) in Rhetorical Genre Studies (RGS) viewed genres as social actions, shifting the focus from the text form to its communicative function and the context. Then, the concept of genres has been expanded by the works of Bazerman (1994), who introduced such notions as genre sets and genre systems to show the interactivity of genres in an institutional setting.

These traditions provide a human-centered approach to the analysis, in which the rhetorical moves, communicative purposes, contexts, and discourse practices are interpreted with the help of linguistic and sociocultural knowledge. Moreover, the appearance of corpus linguistics provided more evidence for this approach by introducing quantitative evidence for investigating recurrent linguistic patterns and variation across genres and registers (Biber, 1995; Biber et al., 1998). Therefore, the corpus-informed methods served as a methodological bridge between computational and human-centered methods (Biber, 1995; Biber & Conrad, 2019).

Recently, machine learning, NLP, and AI have allowed researchers to analyze large corpora in automated mode (genre classification, topic modelling, multidimensional linguistic analysis, etc.). These five selected papers present this methodological shift by using mainly human-centered and corpus-informed approaches to ChatGPT-related research abstracts and European research-project websites, or computational methods (three papers). Overall, these papers prove the emergence of computational Genre Analysis, in which automated processing serves as an additional tool for human interpretation. The following sections discuss the approaches described above comparatively.

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5. Human-Centered Genre Analysis

In human-centered Genre Analysis, genres are considered socially situated communication acts with meanings extending beyond linguistic features. In this case, scholars make extensive use of qualitative interpretation in relation to discourse communities, communicative purposes, rhetorical organization, and institutional context. While corpus-informed approaches may be employed to provide additional quantitative data, human expertise in linguistics and theoretical interpretation plays crucial roles here (Miller, 1984; Swales, 2004; Devitt, 2015).

The human-centered genre approach is mainly developed in English for Specific Purposes (ESP) and Rhetorical Genre Studies (RGS). According to the ESP theory proposed by Swales (1990), genres are viewed as communicative events defined by common purposes within discourse communities. In academic settings, however, the conventions of genres differ according to the field of study, since writers are sensitive to the expectations of specific discourse communities (Hyland, 2008), whereas, according to Miller's (1984) RGS theory, genres are seen as social actions emerging from rhetorical situations. Bhatia (2002) also points to the importance of a multi-perspective approach that considers the complexity of institutional and professional discourse. These traditions collectively highlight the relationship between communicative purpose, linguistic form, and context (Swales, 2004; Hyland, 2004; Hyland, 2008; Bhatia, 2004).

The two articles analyzed below demonstrate that this interpretive approach is still highly relevant. Although they employ corpus-assisted methods when needed, they continue paying primary attention to rhetorical organization, communicative purposes, and institutional context. Therefore, it becomes evident that human interpretation is still indispensable despite technological development.

5.1 Article 1

Trending Technologies: A Corpus-based Genre Analysis of Abstracts on ChatGPT

5.1.1 Research Objectives

This study by Bonsu and Adusei (2023) aimed to focus on the lexicogrammatical features and rhetorical construction of abstracts of research studies focused on ChatGPT. Other than traditional discipline-specific genre research, this study is structured around a common topic; therefore, evaluating how the same theme influences genre traditions across discipline limitations. This research objective shows an increasing interest in taking account of how academic discourse is being reshaped through evolving technologies (Bonsu & Adusei, 2023).

5.1.2 Theoretical Framework

This research strictly follows ESP conventions, drawing on Hyland's (2000) five-move structure and Swales's (1990) move-step model for abstracts. Both models realize genres as communicative, structured events curated by the demands of a discourse community. This is integrated by the addition of qualitative aspects through corpus linguistics, enabling the evaluation of repeated lexical patterns.

However, this research is in line with the ESP approach; it doesn't deal with other frameworks like Systemic Functional Linguistics (SFL), which would give a more detailed analysis of how meanings of language are informed through metafunctions. It also doesn't involve Critical Discourse Analysis (CDA), which would reveal ideological directions of AI discourse, like shaping technology innovation. Moreover, it does involve corpus analysis, but as evidence for strengthening qualitative analysis and not for driving analytical conclusions independently. Therefore, the theoretical framework remains predominantly human-centered.

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5.1.3 Methodology

Methodology includes a compiled corpus of published within a specific time frame 72 abstracts. The researcher has used AntConc to implement analysis of lexical frequency analysis and moves. So, a mixed-method approach is used that combines quantitative analysis of lexical features and qualitative realization of rhetorical structure. A human-centered approach is used throughout the process of analysis, as corpus findings are realized through disciplinary discourse patterns and a broader theoretical framework of communicative purpose (Bonsu & Adusei, 2023).

5.1.4 Key Findings

This research finds a continuous five-move structure, with product and purpose emerging as essential moves. By reviewing the lexical analysis, it is revealed that there is a strong focus on words like "AI", "ChatGPT," and "education," which shows a concentration on the same theme of technological applications in an academic scenario. These results suggest that specific topic discourse can lead to convergence in genre structure even across different disciplines. Ultimately, the findings also suggest that innovation in technology is creating lexical newness without changing already formed rhetorical patterns (Bonsu & Adusei, 2023).

5.1.5 Contribution to Genre Analysis

This research adds to genre analysis by aligning the ESP approach to evolving technological discourse. It shows that genre traditions are not just discipline-specific but can also be realized by topical trends. Such research is specifically important against the backdrop of increasingly growing academic domains. It also shows how corpus analysis, rather than replacing, enhances qualitative analysis (Bonsu & Adusei, 2023).

5.1.6 Critical Evaluation

Apart from these research contributions, this study has some limitations, as well as dealing with small data and lacks deep rhetorical analysis. It does not include step-level analysis, which limits the micro-level findings, and the absence of CDA limits its ability to draw broader social and cultural implications. In addition, this study overlooks the expected disciplinary differences by assuming homogeneity in discourse communities. This research is primarily based on conventional corpus analysis methods and does not fully utilize computational techniques like transformer-based language models or topic modeling. Having said that, such limitations cannot diminish its worth as a contribution in the field of AI-based academic genres. (Bonsu & Adusei, 2023)

5.2 Article 2

Exploring Researchers' Professional Digital Discursive Practices: A Genre Analysis of European Research Project Websites

5.2.1 Research Objectives

In this second study, there is a change of attention towards institutional digital communication from the academic abstracts, focusing on European research project websites as an evolving digital genre. The aim of this study is to analyze the genres in international research project websites and their communicative aims. It aims to find out how the genres share scientific information internationally. The main objective is to uncover how such websites, specifically those from the H2020 European research tasks, spread the research to a wider audience, increase project visibility, and promote the self-branding of research groups (Mur Dueñas, 2023).

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5.2.2 Theoretical Framework

The research is based on genre analysis as an organized view of how written artifacts are grouped to reveal and elaborate the communicative purposes and structural features of online discourse. It also confirms the evolution of genre analysis and genre research because of the intervention of digital media, Computer-Mediated Communication (CMC) that changed genre production, function, and reception. The framework combines both RGS and ESP, involving concepts like genre systems, moves, and meta-genres. Therefore, the theoretical framework moves from traditional genre analysis to digital mediated communication while keeping its focus on social context and communicative purpose.

5.2.3 Methodology

From European research projects, a sample of approximately 10 websites within the Horizon 2020 program is used in this research, and a text-based rhetorical analysis is conducted, focusing on communicative functions and move structures. Even though research acknowledges multimodal communication, the key emphasis is on textual rhetoric rather than on interactive design or visual aspects (Mur Dueñas, 2023).

5.2.4 Key Findings

On research-based websites, two main types of genres are found. One is website-generated genres, and the other is website-hosted genres, differentiated based on the functions they perform, such as branding and dissemination. Such genres perform communicative functions altogether, extending beyond just providing information by enhancing project visibility, strengthening international collaboration, promoting institutional identity, and showing accountability of the research. Results therefore show that digital communication not only changes the medium by which the genres work but also their communicative purposes (Mur Dueñas, 2023).

5.2.5 Contribution to Genre Analysis

This research adds to the genre analysis by expanding it to digital discourse in institutional websites through situated rhetorical analysis, which is an unexplored area of research so far. This research also promotes the idea that genres are flexible through hyper modality, hyperlinking, and hyper modality. Sociocultural and technical changes highlight the dynamic nature of genres. This research fills the gap between contemporary digital discourse research and traditional genre analysis. (Mur Dueñas, 2023)

5.2.6 Critical Evaluation

This research gives an important initial insight into digital genre through European research project websites and makes use of genre analysis to find out specific genres along with their communicative features. On the other hand, the sample size is small and lacks depth of multimodal analysis and generalization of the research; it does serve as a strong base for future research in this field. This research is an important contribution as it represents how conventional rhetorical analysis continues to show emerging forms of scholarly digital communication. (Mur Dueñas, 2023)

5.3 Human-Centered Approach Evaluation

The two works mentioned above are evidence of the persisting importance of the human-centered approach in modern Genre Analysis. Despite the use of corpus-assisted or computational methods, these studies still base their strength on qualitative rhetorical interpretation of genres based on ESP and RGS approaches. As opposed to considering genre statistically, these studies explore how socially situated

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communicative practice shaped by discourse communities and institutions fulfils communicative purposes (Bonsu & Adusei, 2023; Mur Dueñas, 2023).

First, the ability to give a context-rich explanation of genre conventions is among the key strengths of this approach. The example of the ChatGPT abstract demonstrates how emerging AI-mediated academic discourse makes use of already existing rhetorical patterns. Similarly, the examination of European research-project websites shows how the digital environment reshapes institutional genres to satisfy their evolving communicative needs. In either case, human expertise is crucial for the interpretation of rhetorical significance, context, and relationships between language and communicative purposes.

At the same time, the examined articles show several methodological weaknesses of the approach. Namely, a relatively small dataset and reliance on mainly interpretive qualitative analysis make it impossible to expand this approach due to the lack of scalability, computational efficiency, and replicability. Qualitative analysis is indeed very deep, but applying such procedures to a very large dataset requires a significant amount of time and specific expertise. That is why researchers often choose corpus-informed or machine learning approaches.

Despite the weaknesses of the approach, it still has enormous theoretical value because the reviewed works clearly demonstrate that the human-centered approach is a conceptual basis for computational approaches to Genre Analysis. Main concepts like discourse communities, communicative purposes, rhetorical organization, and genre relations guide the evaluation of computationally discovered patterns. Therefore, the human-centered approach will be indispensable in the future; on the other hand, computational methods provide opportunities to extend their empirical scale and analytical reach.

The basic features of the two studies are outlined in Table 2, which includes their research focus, analytical approach, main findings, and methodological weaknesses.

Table 2: Comparison of the articles using the Human-Centered approach in Genre Analysis.

CRITERIA	ARTICLE 1: BONSU & ADUSEI (2023)	ARTICLE 2: MUR DUEÑAS (2023)
RESEARCH FOCUS	Examine the rhetorical structure and lexical patterns of research abstracts related to ChatGPT.	Examine the communicative purposes and rhetorical organization of European research-project websites as emerging digital genres.
ANALYTICAL FRAMEWORK	Human-centered rhetorical analysis supported by corpus-linguistic evidence.	Human-centered qualitative analysis focuses on communicative purposes and digital professional discourse practices.
KEY CONTRIBUTION AND STRENGTH	Extends ESP Genre Analysis to AI-related academic discourse by combining corpus-linguistic evidence with rhetorical interpretation.	Extends Genre Analysis to digital institutional communication by examining emerging professional genres through ESP and RGS perspectives.
PRINCIPAL LIMITATION	Small corpus, limited step-level analysis, and insufficient attention to sociocultural and ideological dimensions.	Small sample, absence of multimodal analysis, and limited cross-cultural generalizability.

Source: *Prepared by the author from Bonsu and Adusei (2023) and Mur Dueñas* (2023).

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Both studies continue to interpret the data from a human-centered perspective as indicated in Table 2, with Bonsu and Adusei (2023) explicitly adding corpus evidence, and Mur Dueñas (2023) adding more emphasis on digital professional discourse and institutional context (Bonsu & Adusei, 2023; Mur Dueñas, 2023).

6. Computational Genre Analysis: Emerging Computational Methodology

With the fast progress of corpus linguistics, NLP, machine learning, and artificial intelligence (AI), the methodology of Genre Analysis has been profoundly changed. Human-centered methods rely primarily on interpretive expertise in understanding communicative intentions and rhetorical structure. Computational methods, on the other hand, allow for analyzing large amounts of data and finding statistical regularities, semantic relations, and multiple linguistic patterns (McEnery & Hardie, 2012; Rogers et al., 2020; Vaswani et al., 2017).

Computational Genre Analysis has moved from corpus-informed approaches like frequency analysis, collocation, concordance, and so forth, to topic modelling, transformer-based language models, supervised machine learning, and Explainable Artificial Intelligence (XAI). These methodologies make possible automatic classification of genres and the analysis of linguistic and semantic patterns that would otherwise be hard to find manually (Biber, 1995; Biber & Conrad, 2019; McEnery & Hardie, 2012; Sinclair, 1991).

Nonetheless, computational methods do not ignore the theoretical background set up by ESP and RGS. They incorporate the ideas of communicative purpose, rhetorical organization, discourse community, and conventions into computable patterns. The three studies under review exemplify the computational approach: one uses topic modelling for the analysis of semantic structures in summaries of movie plots; another one uses machine learning and explainable AI (XAI) to differentiate written genres; the third one constructs a multidimensional computational model and considers news genres as probabilistic entities rather than fixed categories (Devitt, 2015; Miller, 1984; Swales, 2004).

6.1 Article 3

Genre Analysis of Movies Using a Topic Model of Plot Summaries

6.1.1 Research Objectives

The main purpose of this research is to find out whether computational topic modeling can identify and differentiate movie genres by semantic analysis of movie summaries effectively. Other than traditional film classification, which depends upon manually determined genre tags such as romance, science fiction, comedy, or thriller, the researchers sought to determine whether computationally extracted thematic structures correspond to already determined cinematic genres. Moreover, the study seeks to examine the relationship between genre classification and semantic representation, exploring whether genres can be considered as groups of recurrent thematic patterns rather than constant categorical labels. (Matthews & Glitre, 2021)

This research aimed to analyze quantitatively, through computational methods, movie genres at a massive scale, which is not so common in genre-related research. The researchers are focused on understanding evolution, composition, and canonical features.

6.1.2 Theoretical Framework

This research has not clearly stated any theoretical framework like SFL (Systemic Functional Linguistics), ESP (English for Specific Purposes), CDA (Critical Discourse Analysis), or RGS (Rhetorical Genre Studies); rather, it depends on textual analysis of movie summaries, particularly unsupervised topic

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modeling, information retrieval, and computational linguistics quantitatively. This method is data-driven, focused on topic distribution and lexical choices to comprehend genre features.
However, the research stays indirectly attached to broader genre analysis as it suggests that genres depict linguistic regularities consistently reflecting common communicative features. In this regard, computational semantics functions as an alternative for investigating genre formation by revealing statistical relationships among lexical items rather than traditionally interpreting rhetorical forms.

6.1.3 Methodology

The research dealt with a huge collection of 42,000 movie summaries. Structured topic modeling was used on these summaries. From this, various forms of genre were identified, which include mapping, canonicity, time and space changes, and recognizability (Matthews & Glitre, 2021).
The research employs **Latent Dirichlet Allocation (LDA),** which is one of the most widely used unsupervised machine learning algorithms used for topic modelling. A corpus of movie plot summaries is taken from publicly available film data depicting varied cinematic genres. Rather than depending on manually given genre categories, the LDA algorithm identifies latent thematic topics present across the corpus by evaluating patterns of word co-occurrence. (Matthews & Glitre, 2021)
Every movie is shown as a random mix of topics, while each topic comprises statistically connected lexical items depicting hidden semantic themes. The resulting topic distributions from computational analysis are then compared with already determined movie genres to find out the usefulness of automated genre identification.

6.1.4 Key Findings

Research shows that coherent thematic patterns closely connected with traditional movie genres are successfully identified by topic modelling. Movies are conventionally classified under specific categories like romance, crime, science fiction, or fantasy, showing unique topic distributions through repeated semantic arrangement. The computational method spots these genres by hidden lexical relationships present within plot summaries rather than depending upon specific genre labels. (Matthews & Glitre, 2021)
The study shows that genres have unique lexical structures and change with time, such as science fiction, western, and road movies attributed to evolution in consumption behaviors and production. Canonical texts are often intense rather than standard examples, opposing the conventional expectation about genre centrality (Matthews & Glitre, 2021).

6.1.5 Contribution to Genre Analysis

This represents a significant methodological innovation because it shifts attention from explicit genre labels toward latent semantic structures generated automatically from textual data. It shows an important innovation in methodology as it shifts attention from definite genre tags to hidden semantic patterns automatically generated from textual details. Moreover, this research extends the scope of genre analysis from traditional professional and academic discourse to cultural texts such as cinematic narratives. The research demonstrates “distant reading " in genre studies by applying topic modeling as a large-scale quantitative method, understanding texts in huge datasets, and giving practical assistance for theoretical assertions about genre flexibility. (Matthews & Glitre, 2021)

6.1.6 Critical Evaluation

Despite having a strong methodology, a clear theoretical framework is not present, which reduces its integration with existing qualitative research. The limitation of the analysis is dependent on textual

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summaries, as genres related to film are multimodal. In addition, these deep cultural meanings are not clear due to the focus on lexical structures. Resultantly, human competence is essential to define why specific semantic patterns correspond to established genres (Matthews & Glitre, 2021).

6.2 Article 4

Leveraging Machine Learning to Explain the Nature of Written Genres

6.2.1 Research Objectives

The main aim of this study is to use a data-based method to notice and identify patterns in different textual genres. The objective of this research is to find out whether genres could be differentiated by linguistic traits and whether such qualities can be structurally identified across different genres (Vicente et al., 2021).

This study answers two main questions: whether genres can be accurately identified using a comprehensive set of linguistically driven traits can be accurately identified and whether linguistic features serve most importantly for genre differentiation and whether such traits conform to pre-determined linguistic theories of genre. Contrary to other computational research that focuses on predictive authenticity alone, this research stresses explainability by combining explainable artificial intelligence (XAI) with machine learning. Therefore, attempting to bridge linguistic explanation and computational modelling instead of taking them in individual analytical ways.

6.2.2 Theoretical Framework

This research has used van Dijk's (1988) discourse theory, specifically relevant to the structural arrangement of news discourse, along with extensive linguistic theories concerning grammatical, discourse-level, semantic, and lexical variation. SFL approach has a functional viewpoint. Genre is realized by linguistic patterns and shaped by communicative function (van Dijk, 1988; Vicente et al., 2021).

This research uses an interdisciplinary theoretical framework involving corpus linguistics, Natural Language Processing, Explainable Artificial Intelligence, and Genre theory. It recognizes conventional linguistic viewpoints acknowledging genres as communicative structures shaped by communicative purposes and rhetorical traditions while deploying these concepts through computational feature engineering. Resultantly, the research depicts how computational methodologies rapidly incorporate theoretical concepts initially developed within qualitative Genre Analysis.

6.2.3 Methodology

Almost 153 linguistic structures using advanced NLP tools, representing structural, grammatical, semantic, and lexical characteristics, are analyzed through a corpus of tales, research articles, and reviews. This shows heterogeneous data suitable for covering three distinct genres: children's tales, news articles, and user-generated reviews, having different communicative purposes such as entertaining, informing, and persuading. The accuracy of classification is evaluated by employing machine learning classifiers. (Vicente et al., 2021)

To automatically classify genres, various supervised machine learning algorithms, which include Random Forests, Multi-Layer Perceptrons, and Linear Support Vector Machines (SVMs), are trained. By applying standard classification metrics involving recall, F-score, precision, and accuracy using nested cross-validation, performance is evaluated.

Interestingly, scholars employed **Explainable Artificial Intelligence (ELI5)** to evaluate model outcomes by recognizing linguistic traits contributing strongly to genre classification. This fusion of linguistic

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explanation and computational prediction separates the research from prior machine learning studies (Vicente et al., 2021).

6.2.4 Key Findings

This research shows maximum accuracy in genre classification, as a well-defined set of almost 153 features was found to be highly relevant and evaluates clear linguistic structure for every genre, demonstrating their communicative function. High classification accuracy is achieved consistently through computational models, which demonstrates that taken out linguistic characteristics effectively differentiate among written genres (Vicente et al., 2021).

Other than the classification analysis, explainability analysis depicts that machine learning outcomes align closely with verified linguistic theories relevant to genre traditions. Ultimately, the results show that computational models encapsulate linguistically meaningful instead of random statistical regularities. (Vicente et al., 2021)

6.2.5 Contribution to Genre Analysis

This research is a strong example of computational genre analysis as it efficiently combines linguistic theory, machine learning, and Explainable Artificial Intelligence within a consolidated analytical framework. Instead of using computational classification as a single technical method, it shows how linguistic feature engineering based on genre theory enhances both theoretical interpretability and predictive accuracy (Vicente et al., 2021).

It gives an accurate framework for structure-based genres and shows the effectiveness of machine learning in linguistics studies, which is highly adaptable to determine other genres. It provides strong research by giving a feature set that is suitable for many genres and a method for evaluating and including new structures (Vicente et al., 2021).

6.2.6 Critical Evaluation

The scope of this study is limited and lacks innovation in the form of a theoretical base. Despite this feature set being suitable for the present study, it is based on the English language, but such features may not be suitable for other languages and for various genres. It also indicates the repercussions for the accuracy of NLP tools and the reliability of outcomes. Still, such limitations do not lessen the importance of research as a big contribution to computational genre analysis. (Vicente et al., 2021)

6.3 Article 5

Beyond Discrete Genres: Mapping News Items onto a Multidimensional Framework of Genre Cues

6.3.1 Research Objectives

This study aims to redefine news genres by introducing a multidimensional framework focused on formality and factuality. Its purpose is to challenge conventional genre divisions and account for the mix of existing media discourse. This research expects to provide a new understanding of genres related to news in the present media, where conventional genre boundaries are distorted. (Lin et al., 2023)

Primarily, the study explores whether computational models can identify varied genre aspects at the same time and find out how separate news articles merge different genre signals. To do so, research tries to find out the hybridity and complexity of current digital journalism, where distinctions have become blurred between opinion, information, entertainment, promotional discourse, and analysis. So, there is growing recognition, which this study responds to, of the transformation of conventional genre traits through digital media and the need for more adaptable theoretical genre classification models.

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6.3.2 Theoretical Framework

This research is based on Multidimensional Genre theory, computational discourse analysis, and corpus linguistics. Genre is considered a flexible and socially formed event, developed by audience anticipation and communicative purposes. This view strongly opposes the idea of inflexible structural ESP models.

The theoretical framework also involves advancements in multidimensional computational modelling and Natural Language Processing (NLP), acknowledging that computational methods can evaluate slight linguistic regularities that are hard to detect with manual-based analysis. However, the research recognizes that computation genre signals find their importance through communicative purposes originally defined within genre theory. Ultimately, the study demonstrates how computational methods, rather than replacing rhetorical understanding of genre, extends them.

6.3.3 Methodology

This research incorporates a computational method merging multidimensional linguistic trait extraction, probabilistic classification techniques, and transformer-based language models. A big corpus of articles related to digital news depicting various journalistic backgrounds is examined using machine learning models efficient at determining various genre signals at the same time rather than allocating each article to an individual genre section (Lin et al., 2023).

Unlike traditional classification systems, this framework calculates the chances that single texts show traits related to various genres. So, it creates multidimensional genre profiles depicting different degrees of analytical, informational, narrative, persuasive, and evaluative discourse. Later, statistical validation processes are used to assess the interpretability and reliability of the computational model.

6.3.4 Key Findings

Results describe that news genres do not have discrete categories but exist as a continuum. Infotainment, which is a hybrid form evolved as something dominant, which shows the mixture of entertainment and informational functions in recent media in response to institutional transformation, audience participation, and technological innovation. Results show that news rarely confines itself to strict genre limitations; rather, the majority of news articles depict a mixture of varied genre signals, demonstrating the hybrid nature of current journalism. (Lin et al., 2023)

Moreover, multidimensional computational models acknowledge intricate semantic, syntactic, discourse, and lexical-level features that jointly differentiate multidimensional genre profiles. Such results show that computational methods give a more realistic and flexible demonstration of digital genres as compared to conventional categorical classification methods (Lin et al., 2023).

6.3.5 Contribution to Genre Analysis

A significant contribution made by this research is interdiction of a computational and multidimensional approach to genre study. It gave a more detailed comprehension of genre blending and evolution. Conventional taxonomies have also been challenged and have provided a more dynamic structure for comprehending genre variations. (Lin et al., 2023)

For exploring genre complexity at unparalleled scales, this research methodologically shows the ability of multidimensional computational language models. As an alternative to binary genre classification, this study introduces probabilistic modelling, therefore giving scholars a more detailed framework that has the ability to represent hybrid digital genres. Therefore, this study, by merging artificial intelligence with current theories of discourse variation, shows advancement in computational genre analysis (Lin et al., 2023).

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6.3.6 Critical Evaluation

In other words, the complexity of the genre is challenged by reducing it to two directions. Genre not only involves linguistic characteristics but also institutional backgrounds, social practices, and ideological implications. More dependence on computational methods and approaches has limited their ability to find out the micro details emphasized within Rhetorical Genre Studies and ESP. So human interpretation is essential in explaining how discourse communities, institutional practices, and communicative motives shape multidimensional genre signals drawn computationally. (Lin et al., 2023)

Although multidimensional computational models achieve impressive analytical performance, their internal decision-making processes remain partially opaque despite ongoing developments in Explainable Artificial Intelligence. Even though transformer-based models reveal remarkable analytical performance, their internal decision-making methods remain weak despite ongoing progress in Explainable Artificial Intelligence. As the framework is created using digital news corpora, more studies are required to define its suitability in other academic, professional, and multimodal genres (Lin et al., 2023; Doshi-Velez & Kim, 2017).

6.4 Evaluation of Computational Genre Analysis

The three computational studies presented can serve as an example of the development of computational approaches to Genre Analysis, where computational methodology is used in addition to existing linguistic theories. Even though each study uses different approaches like topic modeling, supervised machine learning, and multidimensional computational modeling, all these studies have one similar purpose – detection and analysis of genre patterns with the help of computational analysis of textual data (Matthews & Glitre, 2021; Vicente et al., 2021; Lin et al., 2023).

One of the advantages of the studies under discussion is the possibility of scalability. In contrast to manual analyses that often require much effort to be performed, computational models can process lots of texts while ensuring analytical reproducibility and consistency. Scalability allows researchers to analyze genre variations within corpora of significant size and thus contributes to the empirical basis of Genre Analysis (McEnery & Hardie, 2012; Vicente et al., 2021).

At the same time, the increasing methodological sophistication can be observed in the reviewed articles. Thus, while the third article demonstrates how unsupervised topic modeling can detect latent semantic patterns without using any genre tags, the fourth article shows how machine learning and Explainable Artificial Intelligence (XAI) can be used alongside linguistically motivated feature engineering. Finally, the fifth article presents the extension of computational Genre Analysis through multidimensional computational modeling of genre rather than simple classification of genres (Matthews & Glitre, 2021; Vicente et al., 2021; Lin et al., 2023).

Still, there are significant limitations in this regard. While computational models can detect language patterns, they might not provide a full explanation of their sociocultural value. Machine learning algorithms detect mainly statistical dependencies, rather than the communication strategies behind genre development in a discourse community. In addition, computational models still rely heavily on corpus quality, annotation processes, feature extraction, and model creation, each of which can impact the results (Devitt, 2015; Miller, 1984; Swales, 2004).

Thus, based on the literature review, it becomes clear that the future of Genre Analysis will not lie in the replacement of human-based analysis by computational models. Instead, the future is about the combination of computational tools and human interpretation into an integrated analysis. Such a combination will allow scholars to use the scalability of computational methods while keeping the contextuality of rhetorical Genre Analysis (Biber & Conrad, 2019; Devitt, 2015; McEnery & Hardie, 2012).

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Table 3 presents a summary of the key features of the three studies that used computational methods for Genre Analysis, including their analytical focus, strengths, and limitations, as well as their computational methods.

Table 3: Features of Computational Genre Analysis

STUDY	COMPUTATIONAL METHOD	ANALYTICAL FOCUS	STRENGTHS	LIMITATIONS
ARTICLE 3	Topic Modelling (LDA)	Semantic themes/topics in movie plots	Unsupervised discovery of latent topics	Limited contextual explanation
ARTICLE 4	Machine learning and Explainable AI	Linguistic feature-based genre classification	Model that integrates predictive modelling with interpretable features	Restricted genre diversity and language scope
ARTICLE 5	Multi-Dimensional computational modelling	Multi-Dimensional news genre Modelling	Represents genre variation and supports large-scale analysis	Outputs of the model need contextual explanation

Source: *The author has compiled this based on the reviewed studies.*

Computational studies use various methods, including topic modelling, machine learning, and multidimensional modelling (Table 3). Despite the variation in methodology, all three show the potential of computational methods to perform systematic and extensive genre analysis, and the ongoing need for contextual interpretation of the computational results (Matthews & Glitre, 2021; Vicente et al., 2021; Lin et al., 2023).

7. Comparison of the Human-Centered Approach to the Computational Approach in Genre Analysis

All five reviewed studies show that Genre Analysis is evolving in its methodology from being mostly interpretative and human-centered to becoming increasingly computer-assisted and computational. Contrary to popular opinion, the human-centered and the computational approaches do not compete but rather represent complementary methodological views on the same phenomenon – genre analysis. The former approach emphasizes the interpretative aspect while the latter focuses on scalability, reproducibility, and computational effectiveness. Their comparison clearly shows the ways contemporary Genre Analysis merges qualitative linguistics with quantitative and computational methodology (Bonsu & Adusei, 2023; Mur Dueñas, 2023; Matthews & Glitre, 2021; Vicente et al., 2021; Lin et al., 2023).

Table 4 summarizes the main similarities and differences within human-centered and computational approaches, focusing on their analytical procedures, theoretical and methodological foundations, interpretability, scalability, human involvement, and main strengths and limitations.

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Table 4: Comparison between Human-Centered and Computational approaches to Genre Analysis.

DIMENSION	HUMAN-CENTERED APPROACH	COMPUTATIONAL APPROACH
ANALYTICAL ORIENTATION	Context-sensitive qualitative and rhetorical interpretation	Data-driven computational modelling and pattern detection
PRIMARY FOCUS	Communicative purposes, rhetorical organization, and social context	Linguistic, semantic, and statistical patterns across texts
METHODOLOGICAL FOUNDATIONS	ESP, RGS, rhetorical analysis, and discourse analysis	Corpus linguistics, NLP, machine learning, topic modelling, and computational modelling
HUMAN INVOLVEMENT AND INTERPRETABILITY	Human expertise remains central throughout analysis and interpretation; generally provides strong contextual explanation.	Human involvement remains important in corpus design, model development, validation, and interpretation; interpretability varies by method.
SCALABILITY	Relatively limited because analysis depends substantially on manual interpretation	High scalability, allowing analysis of large digital datasets
PRINCIPAL CONTRIBUTION AND LIMITATION	Provides rich contextual and sociocultural interpretation but may be less scalable	Enables systematic large-scale pattern detection but may provide less contextual and sociocultural explanation without human interpretation

Source: *Created by the author based on the synthesis of the reviewed literature.*

Table 4 shows that neither methodological approach is better than the other. In fact, each of them makes unique and valuable contributions to the research of genre. While Human-centered Genre Analysis is more efficient in explaining why certain choices of communication take place based on the analysis of the rhetorical structure of texts, discourse communities, and institutional context, Computational Genre Analysis is more effective in discovering how often certain linguistic structures are used consistently and frequently. Thus, strong points of one approach may easily cover the weaknesses of another (Biber & Conrad, 2019; Devitt, 2015; McEnery & Hardie, 2012).

Another important difference between human-centered and computational approaches is related to theory. As mentioned above, human-centered methods use established theoretical frameworks of RGS and ESP, which have communicative purposes of discourse as organizing principles. Moreover, even computational approaches, though being quite advanced in technological terms, still rely on theoretical evaluation when interpreting computer outputs. Also, computational systems require theoretical knowledge for designing the corpora and choosing linguistic features (Miller, 1984; Swales, 2004; Devitt, 2015).

Therefore, it is obvious that the future of Genre Analysis does not involve substitution of artificial intelligence for human expertise. On the contrary, modern scientific practice supports a hybrid approach that includes combining computational modeling with rhetorical evaluation. Corpus linguistics plays a particularly important role in this transition since it serves as a link between qualitative discourse analysis and computational analysis (Brown et al., 2020; Rogers et al., 2020; Vaswani et al., 2017).

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To sum up, the comparison has shown that Genre Analysis is becoming more interdisciplinary, as linguistics, corpus studies, discourse analysis, computer science, and artificial intelligence contribute to the creation of more complex and comprehensive models of genre analysis than would have been feasible if based solely on human analysis or computerized models.

8. Emerging Trends in Genre Analysis

The five studies presented in this article represent some important progress in the methodology of Genre Analysis which occurred since the emergence of the ESP tradition linked with Swales (1990). From the early focus on rhetorical analysis and communicative purpose, Genre Analysis has been incorporating such methodologies as corpus linguistics, Natural Language Processing (NLP), machine learning, and artificial intelligence (AI). Instead of supplanting existing theoretical conventions, these developments are expanding the scope of the analysis and making it possible to analyze even larger datasets of a technologically mediated nature. There are several trends emerging from the reviewed literature (Swales, 2004; Hyland, 2008; Bhatia, 2014).

8.1 Digital Genres and Technology-Mediated Communication

One of these trends is the increased attention to digital genres. While academic, professional, and institutional genres are analyzed as conventional types of texts, digital genres are analyzed as evolving within the context of a technologically mediated environment that is characterized by interactivity and multimodality, as well as changes in audience expectations. Examples of research into ChatGPT-related research abstracts and European research-project websites present this trend. For instance, research-project websites are an intersection of providing information, accountability, institutional branding, and public engagement. ChatGPT-related abstracts show how emerging technologies bring new terms to disciplinary vocabulary but at the same time use conventional academic rhetorical conventions (Bhatia, 2014; Hyland, 2015; Mur Dueñas, 2023; Bonsu & Adusei, 2023).

8.2 Corpus-Based Genre Analysis

Corpus linguistics has proven itself to be a significant methodological link between human-oriented interpretation and computational modelling. Frequency, collocation, keyword, and concordance analyses offer empirical backing for rhetorical insights (Biber et al., 1998), whereas more sophisticated computational analysis builds upon corpus-based research with the use of topic modelling and machine learning techniques. Therefore, corpus analysis reinforces human interpretation and does not replace it, which justifies the popularity of integrative qualitative-quantitative approaches (Biber, 1995; Biber & Conrad, 2019; Conrad, 2002; Sinclair, 1991).

8.3 Artificial Intelligence and Machine Learning

Another significant trend in computational Genre Analysis is the combination of AI and machine learning approaches. Transformer architectures further revolutionized NLP, providing a more efficient way of modeling relationships between contexts in sequences of language (Vaswani et al., 2017). Transformer-based language models have also opened up new opportunities for computational analysis, including the study of representations of language in context and the linguistic information that is captured by pretrained models (Rogers et al., 2020). Using supervised classification, topic modelling, and other computational methods, researchers can find lexical, semantic, syntactic, and discursive patterns in large amounts of data. However, the results of such approaches must be interpreted from a theoretical point of view since the notions of communicative aim, discourse community, and rhetorical structure cannot be fully captured by statistics (Swales, 1990). Thus, machine learning and AI are to be regarded as

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complementary tools rather than substitutes for the linguistic one (Brown et al., 2020; Rogers et al., 2020; Vaswani et al., 2017).

8.4 Explainable AI and Interpretable Genre Models

The increased application of Explainable Artificial Intelligence (XAI) responds to the need for interpretability of computational models. For example, the study Leveraging Machine Learning to Explain the Nature of Written Genres shows how XAI can be used to understand which linguistic factors affect genre classification made with algorithms. Such approaches go beyond predictive power and aim at providing the linguistic basis for the computation results (Vicente et al., 2021; Doshi-Velez & Kim, 2017).

8.5 Multimodal Genre Analysis

The advent of digital communication has led to further development of Genre Analysis to include not just verbal texts but also websites and other multimodal online genres. With the ongoing advancements in the development of computational models of multimodality, there is a chance of analyzing both verbal and non-verbal resources used to create communicative meanings. Thus, multimodal Genre Analysis can be considered one of the important areas of development of genre analysis.

8.6 Hybrid Human–AI Methodologies

The most important future-centered trend identified in this review of the literature is the move toward hybrid Human–AI methodologies. Human-focused methodology allows for interpretations of rhetorical, contextual, and sociocultural nature, and computational methods enable scale, consistency, and detection of larger patterns. Corpus linguistics increasingly bridges these two methodologies by providing empirical support that is then interpreted through linguistic theories. Future genre analysis will likely involve the creation of a collaborative framework where computational systems do the heavy linguistic lifting, and humans perform the theoretical interpretation. Such developments also have implications for genre pedagogy, as genre-based instruction may be able to make the linguistic and rhetorical features of target genres more explicit to learners (Hyland, 2007).

9. Future Directions for Genre Analysis Research

The studies reviewed above show that Genre Analysis is becoming increasingly interdisciplinary with intersections between linguistic theory, corpus methodologies, computational modelling, and artificial intelligence. Considering the trends in methodology identified above, several areas deserve more attention in future Genre Analysis research.

9.1 Explainable Artificial Intelligence

In future research, Explainable AI (XAI) techniques should be used that will shed light on linguistic and cognitive characteristics of the classification performed by computational methods. This will make the theory more valid, reliable for the researcher, and useful in practice, especially when working in educational environments where explainable AI analysis is necessary (Doshi-Velez & Kim, 2017).

9.2 Multimodal Genre Analysis

The growing combination of textual information, images, audio, hyperlinks, and other interactive components implies the need for Multimodal Genre Analysis, which can investigate several semiotic modes simultaneously. In future research, there is a need to study how different modes collaborate to create communicative intentions and genre conventions in the digital environment (Kress & van Leeuwen, 2006).

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9.3 Human-AI Collaborative Frameworks

There is a need to pay more attention to Human-AI collaboration frameworks rather than to using computational intelligence as a replacement for linguistic expertise. Computers can detect patterns on a large scale and perform efficient and computationally scalable analysis, while researchers are responsible for rhetorical, theoretical, and contextual interpretation of the results. In this way, one will receive a more holistic picture of complex phenomena.

9.4 Cross-Cultural and Multilingual Genre Analysis

Computational Genre Analysis is often based on English language data sets. Future research will have to include corpora from different languages and cultural contexts to understand if computational genre models are applicable in other linguistic, cultural, and institutional contexts. This will help to increase the generalizability of genre models and to identify culture-specific patterns of genre construction (Bhatia, 2004).

9.5 Large Language Models and AI-generated Genres

The fast development of Large Language Models (LLMs) presents many opportunities for future research. These models have opened the door for computational language analysis to become much broader, especially with the advent of models that can learn complex linguistic patterns from vast amounts of textual data (Brown et al., 2020). One can investigate the phenomena of AI-generated genres, human-AI co-authorship, prompting as an emergent communicative practice, and rhetorical conventions of machine-generated academic and professional discourse. Such research becomes critical due to its significance in understanding how AI changes not only genre analysis but genre creation as well (Brown et al., 2020).

9.6 Multidisciplinary Genre Corpora

It will be interesting in the future to create larger, systemically designed multilingual and multidisciplinary genre corpora. This will allow more efficient computational modeling and comparison of results across different cultures, disciplines, and communicative contexts.

These directions taken together indicate that the future of Genre Analysis will be the future of the interdisciplinary field combining corpus linguistics, applied linguistics, computational linguistics, multimodality studies, and artificial intelligence. This development of the field will rely not only on technical innovations but also on theoretical and interpretive foundations which account for the functions and evolution of genres in communicative communities.

10. Limitations of the Review

Although it has helped in the development of understanding of the methodological development of Genre Analysis, this review has some limitations. First, the search for relevant literature was conducted using Google Scholar as the main source of literature. While its wide interdisciplinary scope makes it useful for finding studies in applied linguistics, corpus linguistics, computational linguistics, and artificial intelligence, it might have been the case that some studies relevant to the present topic have been missed as a result of relying on a single database. Second, this review is not strictly a systematic review, as it does not have the same coverage or screening procedures as a systematic review. Third, the analysis is drawn from a small, purposively selected sample of five contemporary studies that reflect the methodological orientations. These studies are useful pieces of evidence of the shift from human-centred interpretation to computational methods but are not intended to represent the diversity of current Genre Analysis research. Lastly, the conceptual framework presented here is an interpretive synthesis of the selected

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literature and thus needs to be further explored and tested with a wider variety of genres, languages, datasets, and methodological settings. Future reviews could benefit from conducting searches in several academic databases, making search strategies and screening procedures transparent, and from having a larger, more systematically selected set of studies.

11. Conclusion

Methodology of Genre Analysis has been developing in a rather significant way from its origins in English for Specific Purposes and Rhetorical Genre Studies to its contemporary application to corpus linguistics, Natural Language Processing, machine learning and artificial intelligence. Five studies discussed in this paper demonstrate not only this development of methodological foundation but also the relevance of genre theories developed earlier (Swales, 2004; Miller, 1984; McEnery & Hardie, 2012).

Human-centered studies show that rhetorical interpretation is still essential for understanding the communicative intention, discourse community, and institutional practices. The contextual approach to interpretation, rhetorical organization, and social action in these papers is strongly influenced by the theoretical framework of Swales' ESP and Miller's Rhetorical Genre Studies. At the same time, computer-oriented studies prove that topic modelling and machine learning, as well as other computational methods, have broadened the methodological possibilities of Genre Analysis, making it possible to investigate huge amounts of data consistently and efficiently (Bonsu & Adusei, 2023; Mur Dueñas, 2023; Matthews & Glitre, 2021; Vicente et al., 2021; Lin et al., 2023).

It should be noted that the comparison carried out during this review indicates that these two types of methodology should not be considered as mutually exclusive alternatives. On the contrary, these are two complementary approaches accounting for different aspects of genre. Rhetorical analysis allows explaining the emergence, evolution, and functioning of genres in the discourse community, whereas computational methodology is used for identifying the distribution of linguistic patterns in increasingly large datasets. Thus, the further development of Genre Analysis does not lie in the choice between interpretation and computational modelling but in the exploration of ways of their integration into a methodological framework (Devitt, 2015; McEnery & Hardie, 2012).

This synthesis helps to lay the foundation for the four-stage conceptual framework suggested in this review. The first stage is human-centered interpretive Genre Analysis, focused mainly on ESP and RGS traditions, and related to communicative purpose, rhetorical organization, and social context. The second stage sees corpus linguistics as a methodological link, a bridge between the quantitative evidence provided by frequency, keyword, collocation, and concordance analysis, and the qualitative interpretation. The third stage is the development of Computational Genre Analysis, where NLP, machine learning, topic modelling, and other computational methods allow for the identification and modelling of genre patterns at large scale. The fourth stage is a continuation of the development of Hybrid Human–AI Genre Analysis, which involves computational analysis and human linguistic, rhetorical, and contextual analysis. In the framework, methodological development is thus not considered as a process in which one method is replaced by another, but as a continuous process that gets more and more integrated.

In general, based on the analysis of the aforementioned papers, it can be argued that Genre Analysis becomes more interdisciplinary with corpus studies, linguistics, discourse analysis, computer science, and artificial intelligence serving to develop new methods in this field. The emergence of digital genres, multimodal communication, explainable artificial intelligence, and Human-AI methodologies provides new avenues for scientific research, which, at the same time, gives rise to issues related to interpretation, transparency, generalization, and computational patterns and their connection with communicative meanings (Biber & Conrad, 2019; Rogers et al., 2020; Vaswani et al., 2017).

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Finally, the future of Genre Analysis is unlikely to include the replacement of human interpretation by artificial intelligence; on the contrary, it should imply the development of hybrid Human-AI analysis approaches, which would allow combining the communicative and social context with computationally established linguistic patterns (Devitt, 2015; Hyland, 2007; McEnery & Hardie, 2012).

In this regard, the four-stage conceptual structure outlined in this review offers a means to conceptualize the methodological evolution of the field and to highlight the continuity between the existing genre theory and the new computational approaches. Genre Analysis can thus be continued as a theoretically informed and computation-based discipline that can meet the more complex linguistic, social and technologically mediated means of communication of the twenty-first century.

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