

Digital reflective aesthetics in literary studies: From big data to new hermeneutic horizons

Heru S.P. Saputra ^{1,*}, L. Dyah Purwita Wardani ², Didik Suharijadi ¹, Zahratul Umniyyah ¹, Gio Pramanda Galaxi ¹ and Ulil Lauhul Mahfudah ¹

¹ Department of Indonesian Literature, Faculty of Humanities, Universitas Jember, Jember, East Java, Indonesia.

² Department of English Literature, Faculty of Humanities, Universitas Jember, Jember, East Java, Indonesia.

World Journal of Advanced Research and Reviews, 2025, 28(02), 1886-1896

Publication history: Received on 05 October 2025; revised on 13 November 2025; accepted on 16 November 2025

Article DOI: <https://doi.org/10.30574/wjarr.2025.28.2.3839>

Abstract

The development of digital technology and the emergence of phenomena *big data* has shifted the paradigm of literary research from in-depth reading of single texts to reflective reading of collective patterns. This article introduces the concept of Digital Reflective Aesthetics (DRA) as a hermeneutic approach that bridges computational analysis with humanistic reflection. Different from purely quantitative approaches in *digital humanities*, DRA positions literary data visualizations—such as theme maps, character networks, and emotion curves—as aesthetic and cultural artifacts containing philosophical meaning. The DRA conceptual model is built on three main layers: *data*, *pattern*, and *meaning*, which interacts dialogically through Aesthetic, Hermeneutic, Cultural, and Ecological-Spiritual principles. By combining the theories *distant reading* (Moretti), *cultural semiotics* (Lotman), and *digital hermeneutics* (Hayles), this model broadens the perspective on literary data as a landscape of cultural awareness. The results of the study show that DRA not only produces a thematic and emotional mapping of Indonesian literature, but also offers a reflective framework for reading local values such as *ngelmu rasa* ('inner knowledge') and *art as education of the soul* in a digital context. This concept has implications for decolonizing digital epistemology in Southeast Asia and rehumanizing the relationship between technology and culture. Thus, Digital Reflective Aesthetics becoming a conceptual bridge between computing and contemplation, opening up new horizons for literary research that is characterful, rooted, and relevant to the challenges of the digital era.

Keywords: big data; digital reflective aesthetics; distant reading; Indonesian literature; Nusantara culture

1. Introduction

The development of digital technology and the explosion of big data have presented new challenges and opportunities for the humanities, including literary studies. The digitization of texts, publishing metadata, and literary social networks enable literary research to be conducted on a large scale, across time, and across cultures. This phenomenon shifts the paradigm of close reading—which emphasizes in-depth analysis of a single text—toward distant reading, which focuses on patterns and relationships among thousands of texts [1]. This shift is not merely methodological but also epistemological, as it forces the literary world to confront new ways of understanding meaning, context, and cultural representation.

The term distant reading, popularized by Franco Moretti, describes the shift from micro to macro interpretation: "understanding literature not by studying particular texts, but by aggregating and analyzing massive amounts of data" [1]. This approach allows for analysis across genres and time, such as observing lexical trends, the development of social themes, and the transformation of language styles. In Europe, this approach has developed into macroanalysis and

* Corresponding author: Heru S.P. Saputra

cultural analytics, which combine statistics, computational linguistics, and data visualization to read literary history structurally [2]. This approach opens up new possibilities in viewing literature as a knowledge system and mapping the dynamics of society's collective imagination.

However, some researchers have highlighted the limitations of a purely quantitative approach. Ciotti notes that "the landscape is still unsatisfactory, as quantitative approaches often lack theoretical grounding and interpretive reflection" [3]. This critique emphasizes that despite the rapid development of big data analysis tools, digital literary research has not always addressed the aesthetic and hermeneutic dimensions. In this context, a balance between technological capabilities and reflective depth arises to avoid "reducing meaning to data."

Within the digital humanities framework, big data enables the exploration of cultural corpuses on an unprecedented scale. Kaplan states that "Big Data research in digital humanities focuses on large or dense cultural data sets, which call for new processing and interpretation methods" [4]. Meanwhile, Primorac et al. [5] show that two decades after the birth of distant reading, the focus of research shifted from mere statistical mapping to integration with literary theory, aesthetics, and cultural history. This means that big data is not only about the sheer volume of texts, but also about how researchers interpret these patterns as expressions of human consciousness.

In Asia, particularly in Taiwan and the East Asian region, digital humanities studies have shown rapid growth, with a focus on building corpus infrastructure and text analysis algorithms. However, researchers like Yuting emphasize the importance of "embedding local cultural values and interpretive traditions into computational frameworks" [6]. This approach emphasizes that data-driven analysis methods must consider local cultural and linguistic characteristics. In Indonesia, Zahra [7] found that digital humanities-based research on Indonesian-language texts is still limited, but has great potential in mapping the nation's linguistic and literary richness. The challenge is to develop a digital approach that does not lose the cultural context of the archipelago.

A similar phenomenon has emerged in Latin America, where digital literary studies seek to decolonize the paradigm of knowledge. Fólica [8] asserts that digital humanities in the Global South requires a contextual approach that is sensitive to issues of epistemic inequality. Valente [9] adds that big data research in Latin America must "theorize beyond the framework of data colonialism" to avoid becoming trapped in a reliance on Western analytical models. Thus, in Latin America, literary big data is not only a quantitative tool, but also a field of epistemological and political resistance to global domination.

Meanwhile, in Africa and the Arab world, the development of digital humanities also shows interesting dynamics. Yéku [10] highlights how African digital literature "becomes entangled with the capitalist politics of datafication," indicating the need to read data as a form of cultural contestation. In the Arab world, the Shamela project has successfully collected over one billion words from classical to modern Arabic texts, forming a large corpus that opens up new opportunities for the study of digital Arabic literature [11]. However, as Belinkov et al. remind us, technical success must be balanced with reflection on meaning, context, and linguistic history.

In this global context, Digital Reflective Aesthetics (DRA) is offered as a new hermeneutic paradigm that combines data analysis technology with aesthetic and cultural reflection. DRA positions literary data visualizations—such as theme maps, character networks, and emotional curves—as interpretable aesthetic artifacts, not merely analytical results. Visualizations not only present information but also express patterns of feeling, giving rise to new meanings about collective human experience. Thus, DRA broadens the horizon of digital literary reading: from reading texts to reading patterns, from empirical analysis to existential reflection.

Finally, in the context of Indonesia/Nusantara, the DRA approach finds strong relevance. Local intellectual traditions such as *art as education of the soul* (Ki Hadjar Dewantara) and *ngelmu rasa* ('inner knowledge') (Ranggawarsita) provides a philosophical foundation for reflective data reading. Indonesian literature—both classical and contemporary—offers symbolic resources for developing digital literacy rooted in cultural and spiritual values. Thus, literary big data is not merely a technological project, but also a means of reconsidering humanity and culture in the digital age.

2. Materials and methods

2.1. Type of research and conceptual approach

This research is conceptual and reflective, not experimental, because it aims to formulate a new theoretical framework in the study of digital literature—namely *Digital Reflective Aesthetics (DRA)*. This approach combines two main domains:

(1) big data analysis methodology in *digital humanities*, and (2) the tradition of aesthetic and hermeneutic reflection in literary and cultural studies.

This conceptual method emphasizes the synthesis of interdisciplinary theories by identifying the intersection between digital epistemology (which is empirical, algorithm-based) and humanities epistemology (which is interpretive and reflective) [1, 12]. Therefore, this article does not start from primary data collection, but rather from literature searches, paradigm mapping, and analysis of current academic discourse.

The DRA approach is based on the digital hermeneutic discourse analysis method, which positions data visualization and computational analytical results as “second texts” [13]. Through reflective reading of visual texts (e.g., *word clouds*, *sentiment maps*, or *character networks*), researchers interpret data patterns as reflecting cultural awareness, aesthetic values, or hidden social narratives.

2.2. Theoretical framework

The theoretical framework of this research consists of the following four main components. (1) Distant Reading–Franco Moretti provides a methodological basis for analyzing literary texts on a large scale through patterns and statistics, replacing individual interpretive approaches [2]. (2) Cultural Semiotics–Yuri Lotman explains that culture is a dynamic sign system that can be modeled structurally. In a digital context, every large corpus is a new semiosphere that represents the dynamics of collective meaning [14]. (3) Digital Hermeneutics–N. Katherine Hayles emphasizes that every human-machine interaction in the production of meaning must be seen as a co-interpretive process between algorithms and human consciousness [3]. (4) Local Reflective Aesthetics–Ki Hadjar Dewantara and Ranggawarsita. Principles *art as education of the soul* and *ngelmu rasa* (‘inner knowledge’) is used to contextualize data reflection with Nusantara cultural values [15].

This framework positions literary big data not merely as a collection of information, but as a landscape of meaning formed by the interaction between global digital structures and local cultural experiences.

2.3. Analysis strategy and process stages

Although conceptual in nature, this approach has a systematic analysis procedure in four stages.

Stage 1, Literature Search and Selection. The search was conducted on international articles, books, and research reports related to digital humanities, big data, hermeneutics, and reflective aesthetics. Sources were drawn from databases such as Scopus, SpringerLink, Taylor & Francis, and DOAJ.

Stage 2, Conceptual Synthesis and Categorization. From the literature obtained, themes were grouped (epistemological, methodological, aesthetic, and cultural). Each theme was analyzed to find *intersections*—the meeting point where technology and hermeneutics meet.

Stage 3, DRA Framework Formulation. Based on the synthesis results, an DRA model was developed that emphasizes the integration of digital analysis (data-driven) and reflective interpretation (meaning-driven). This model is visualized as a conceptual diagram connecting three layers: data, patterns, and meaning.

Stage 4, Application Potential Test. The DRA model is then tested conceptually in the context of Indonesian literature, considering its potential application for the analysis of digital corpuses of Indonesian and regional language poetry, novels, or folktales.

2.4. Potential application in Indonesia

The implementation of DRA in Indonesia has strategic potential in three main areas. (1) Digitization and Analysis of the National Literary Corpus. By integrating the literary digitization project of Balai Pustaka, the National Archives, and digital literacy platforms, DRA can help build a large map of the thematic development of Indonesian literature from the colonial era to the contemporary. (2) Integration of Cultural Values in Digital Analysis. This approach allows for reflection of Pancasila values, cultural diversity, and local spirituality in the context of digital representation, so that *big data* without losing its “cultural soul.” (3) Humanistic Digital Education and Literacy. DRA has the potential to be implemented in the Indonesian Literature curriculum at universities, introducing students to data-based analysis methods as well as cultural reflection. This approach can foster a generation of literary researchers who are adaptive to technology without abandoning humanitarian values.

Thus, the part *Materials and Methods* this shows that the Digital Reflective Aesthetics research is not just a technical experiment, but also an epistemological project to build a bridge between technology, aesthetics, and Indonesian culture in the big data era.

3. Results

The results and discussion cover four areas: conceptual results: a model of digital reflective aesthetics, basic principles of digital reflective aesthetics, examples of application to digital Indonesian literature, and a discussion on strengthening theory and culture. These four areas are explained as follows.

3.1. Conceptual results: digital reflective aesthetic (DRA) model

The main result of this research is the formulation of a conceptual model that we call Digital Reflective Aesthetics (DRA), which aims to synergize two main domains in contemporary literary studies: (1) big data-based analysis and computational technology, and (2) in-depth aesthetic-hermeneutic interpretation of cultural and aesthetic meaning. This model was born from the need to bridge analytical-quantitative methods with aesthetic reflection, which has so far received less attention in digital humanities literature.

The DRA is conceptually designed through three interrelated layers: data, patterns, and meaning. The data layer encompasses a large corpus of digitized literary texts, metadata, publishing traces, and literary cultural heritage products that have been converted to digital format. The pattern layer emerges from computational analysis processes—for example, through topic modeling, sentiment analysis, network analysis, and data visualization—that produce statistical patterns, networks, or other forms of visualization. As demonstrated in the visualization and humanities literature, “visualizations for large text collections ... support exploring large text collections to explore structure in play” [16]. The meaning layer (reflection) is the stage where researchers read these patterns as aesthetic artifacts, not simply technical outputs. Visualization patterns are considered “second texts” that can be interpreted hermeneutically—as Vickers et al. put it in the semiotics of visualization: “visualizations fit the semiotic frameworks ... and allow us to distinguish properties of the visualization process” [17].

Table 1 Conceptually, DRA is described through the following three main layers.

Layer	Focus of Analysis	Epistemic Orientation	Application Examples
Layer 1: Data	A large digitized corpus of literary texts (novels, poetry, classical manuscripts, and literary social media).	Empirical, quantification-based.	A collection of 500 Indonesian novels from 1920–2020 for thematic analysis.
Layer 2: Pattern	Results of computational analysis: word frequency, topics, emotions, character networks, or narrative flow.	Analytics, algorithm-based and visualization.	A topic map of “women”, “land”, and “identity” in postcolonial literature.
Layer 3: Meaning (Reflection)	Aesthetic and hermeneutic interpretation of emerging data patterns.	Philosophical and cultural, based on values and feelings.	Reading the pattern of “mother-land-nation” as a symbol of the ecological awareness of the archipelago.

Empirically and theoretically, the DRA model emphasizes that these layers are not linear, but rather circular and dialogical: the resulting meaning can stimulate further data exploration; the patterns discovered encourage reflective inquiry; and new data opens up horizons for broader interpretations of meaning. This emphasizes that digital literary research does not end with “counting” or “mapping,” but with “making sense.”

International developments in data visualization and digital humanities also support this framework: for example, Trocchianesi et al. emphasize that “the involvement of design seems confined to the development of digital instruments... the whole cultural system is taking action to develop a digital version of itself” [18]. This suggests that visualization in digital humanities is not just about tools, but about new aesthetics and cultural experiences. Similarly, Ma and Li highlight the challenge of “how do we choose the most effective and sufficient forms of visualization to enhance the expression of specific cultural and humanities data?” [19], which directly touches on the reflective aesthetic aspect of the digital literature visualization process.

The DRA model also contains basic principles that serve as the basis for its operation: Aesthetic, Hermeneutic, Cultural, and Ecological-Spiritual principles (as described in the previous section). Each of these principles has supporting theoretical relevance.

The aesthetic principle is supported by research that states that visualization is not just an analytical tool but the “aesthetic value of new technological humanities” [20]. The hermeneutic principle suggests that only through a reflective reading of patterns can cultural meanings and human experiences be revealed, as Dieleman points out that visualization in the humanities often lacks cultural critique [21]. The cultural principle emphasizes that digital literature research must consider local cultural contexts, as explained in articles discussing studies in Asia [22] and in the Global South [16, 17]. The ecological-spiritual principle invites us to read data patterns as reflections of human values toward nature and society—a dimension under-touched in purely technical literature.

Operationally, the DRA model enables literary researchers to: (1) formulate research questions that connect data and meaning: not just “what themes emerge?”, but “what do these themes reveal about collective experience?”; (2) select appropriate analytical methods (topic modeling, sentiment analysis, network analysis) and design visualizations that are not only technically correct but also aesthetically and culturally meaningful; (3) conduct reflective interpretations after visualization—discussing patterns in relation to local/national historical, cultural, ideological, and aesthetic contexts; and (4) use the results of the interpretations to formulate further research or more specific corpus development—so that this model is dynamic.

In the context of Indonesian literature, the DRA model is highly relevant: a large corpus of novels, poetry, or traditional texts can be treated as a “collective voice of the nation” that is visualized and then interpreted. For example, the visualization of the “mother-land-nation” theme from post-colonial novels can be read as a map of national identity, then interpreted from the perspective of Nusantara culture. This model also opens up opportunities to connect data analysis with local values such as *ngelmu rasa*—that is, a reading that involves not only algorithms, but also taste and cultural awareness.

Thus, the Digital Reflective Aesthetics (DRA) model asserts that in the era of big data, literary studies does not lose its humanistic depth, but rather gains a new framework for reflecting on how humans construct meaning within networks of texts and data. This model shifts from simply “big data” to “big meaning”—where statistical patterns and visualizations emerge as windows into human cultural experience.

3.2. Basic principles of digital reflective aesthetics (DRA)

Within the framework of the Digital Reflective Aesthetics (DRA) model, there are four basic principles that serve as its theoretical and operational foundation: the Aesthetic Principle, the Hermeneutic Principle, the Cultural Principle, and the Ecological-Spiritual Principle. These four principles ensure that big data-based literary analysis does not lose its reflective depth and humanistic value, but instead expands the interpretive space between technology and culture.

3.2.1. Aesthetic principles

This principle emphasizes that literary data visualization is not only an analytical tool, but also an aesthetic medium that holds the value of beauty and symbolic expression. In this study ... *digital humanities*, digital aesthetics has become an important field because “data visualization has grown in importance in the humanities as a new way of making meaning from textual corpora” [17]. Naukkarinen [23] explains that the use of a computational approach can actually clarify the nature of aesthetics itself: digital aesthetics allows us to read visual patterns and structures as a form of conceptual art. Thus, in the context of DRA, visualizations such as *word cloud*, *topic map*, or *emotion arc* not just a presentation of data, but a “canvas of meaning” that invites readers to reflect aesthetically. In addition, research by Trocchianesi et al. [22] shows that design in digital humanities is not just a technical process, but an integral part of *meaning-making*. Color, rhythm, and visual form have semiotic functions that strengthen the meaning of digital literature.

3.2.2. Hermeneutic principles

The hermeneutic principle teaches that meaning does not automatically emerge from data, but rather through a continuous process of reflective interpretation. Research on *hermeneutic visualization* emphasizes that “digital humanities research depends on continuous reflection on the epistemological principles underlying data interpretation” [24]. In practice, literary researchers need to read visual patterns not only as statistical representations, but as a second text containing layers of meaning. Therefore, every DRA analysis is always followed by an interpretation

stage: why this pattern emerged, how it relates to the historical context, and what cultural values it reflects. This process is in line with Gadamer's hermeneutic spirit, which places reading as *dialog* between data and human consciousness.

3.2.3. Cultural principles

This principle emphasizes the need to maintain cultural context in reading digital literary data. Finnemann [25] asserts that the heterogeneity of digital materials demands serious attention to their origins, social contexts, and modes of circulation. The meaning of literary data will change when removed from the cultural context in which it lives. In the context of DRA, this means that corpus selection, analysis, and visualization must be sensitive to linguistic aspects and local values. Research on digital humanities in Asia shows that Western algorithms are not always suitable for Eastern contexts that have different linguistic logics, symbols, and cultural values [6]. Thus, DRA functions as a bridge between technological globalization and the locality of meaning.

3.2.4. Ecological-spiritual principles

The final dimension of DRA is rooted in the view that digital aesthetics must still contain human values, spirituality, and ecological awareness. Kim [20] in his study on *technological humanities* emphasizes the importance of restoring aesthetic values and sustainability in modern humanities research. In the Indonesian context, this principle resonates with Ki Hadjar Dewantara's [15] idea of *art as education of the soul* and Ranggawarsita's views regarding *ngelmu rasa*, namely knowledge born from an inner sensitivity to nature and humans. The visualization of data patterns within this framework can be read as a reflection of ecological awareness—for example, the relationship between humans, land, and spirituality in literary texts. This principle ensures that digital literature is not only "technologically intelligent," but also "culturally soulful."

These four principles form the epistemic foundation of DRA. The aesthetic principle ensures that visualizations are both beautiful and symbolic. The hermeneutic principle emphasizes the need for dialogue between data and meaning. The cultural principles places local context at the center of interpretation. The ecological-spiritual principle connects digital reflection with human and natural values. Together, they make DRA a paradigm that unites computing, contemplation, and culture.

3.3. Examples of applications for digital Indonesian literature

The application of the Digital Reflective Aesthetics (DRA) model in the context of Indonesian literature has great potential, especially since Indonesia is in the early phase of developing its digital ecosystem *Digital Humanities* (DH) in Southeast Asia. Unlike Europe or North America, which already have established digital infrastructure, Southeast Asian countries are moving towards *contextual digitalization*—namely digitalization based on local wisdom and regional linguistics [26]. Indonesia, with its diversity of languages, traditions, and literary forms, is an ideal space to test the DRA concept as an approach that combines data analysis and cultural reflection.

3.3.1. Thematic mapping and cultural traces

The first implementation of DRA can be done through thematic mapping of Indonesian literature. By using the algorithm *Latent Dirichlet Allocation (LDA)*, thousands of texts from novels, poems, and traditional manuscripts can be classified into dominant themes such as nationalism, women, ecology, and spirituality. Similar studies have been successfully applied in projects *Malay Heritage Texts Project* in Malaysia, which analyzes themes in classical Malay sagas using an approach *topic modeling* [27].

If applied to Indonesia, the results of the analysis could be visualized in the form of an interactive map titled "Thematic Atlas of Indonesian Literature 1900–2020." This map would show how themes such as *land*, *mother*, and *nation* shifting in meaning from colonial to postcolonial. This visualization not only displays semantic changes, but also expresses a transformation of social and aesthetic values. As explained by Chowdhury et al., *topic visualization* can function as a "critical lens to read history and identity through cultural text patterns" [28].

With a reflective approach, these visual patterns are then read as a reflection of the nation's ideological and cultural journey. For example, the dominance of the word *land* in the period 1950–1970 can be interpreted as an expression of agrarian awareness and the struggle for national identity, while the emergence of the term *climate*, *river*, or *mountain* in the contemporary period marks the increasing ecological awareness in modern Indonesian literature.

3.3.2. Analysis of emotions and aesthetic waves

The next step is to apply sentiment analysis to understand the dynamics of feeling in Indonesian literary works. By utilizing language models such as *IndoBERT*, the curve of emotions can be depicted quantitatively and aesthetically. For example, Chairil Anwar's poetry shows sharp fluctuations between anger and resistance, while Sapardi Djoko Damono's work displays a pattern of stability and reflection. The results of this visualization can be converted into *emotion arc*, as developed by Reagan et al. who showed that "emotional trajectories of narratives reveal archetypal story shapes" [29].

This approach has already begun to be piloted in Thailand through a project *Thai Poetic Emotion Mapping*, which combines emotional analysis with local cultural semantics [30]. In the Indonesian context, this model can be expanded into a collective inner map—an attempt to read the emotional journey of society through literary works across generations. This is also in line with the reflective aesthetic principle of DRA, which views emotions not merely as linguistic data, but as a representation of human experience in cultural history.

3.3.3. Network of figures and social structure

Character network analysis is another application of DRA that can map social relationships and power structures in literary texts. Using tools such as *Gephi* or *Palladio*, the relationships between characters in classic Indonesian novels can be visualized to show social dynamics. *Network Analysis of Classical Chinese Novels* shows that "character networks mirror real social systems, providing insights into hierarchy and ideology" [31].

When applied to works such as *Bumi Manusia* ['Earth of Mankind'] in Pramoedya Ananta Toer's works, network patterns can display colonial domination in the visual form of a social pyramid—with Minke and Nyai Ontosoroh as the symbolic center of national consciousness. This kind of network analysis can be extended to contemporary literature to explore how relations between gender, class, and popular culture are represented in the digital world.

3.3.4. Map of intertextuality and narrative ecology

DRAs can also be used to construct intertextuality maps, which trace the interrelationships of themes, styles, and symbols between works across eras. By utilizing *semantic network analysis*, the relationship between writers such as Pramoedya, Ayu Utami, and Eka Kurniawan can be visualized as an "ideological network." A similar approach is used in *Singapore Digital Heritage Project*, which connects literary works, urban history, and identity narratives [32].

In the Indonesian context, this map can help understand how national imagination, modernity, and spirituality have transformed from Balai Pustaka literature to digital urban literature. These intertextual patterns provide a space for building reflective awareness about the sustainability of local cultural and aesthetic values in the digital age.

3.3.5. Regional and global collaboration opportunities

The Southeast Asian region is currently building cross-border collaboration in *digital humanities*, like *SEA DH Consortium* which brings together researchers from Indonesia, Malaysia, Thailand, and the Philippines. According to Liu et al., "regional collaboration in Southeast Asia has become a driving force for decolonizing global digital humanities through multilingual and multicultural projects" [33].

Through the DRA framework, this collaboration can focus on establishing a Southeast Asian Digital Literature Data Center, where researchers can share corpora, methods, and visualization systems. Thus, research on digital Indonesian literature will not stand alone but become part of a regionally reflective movement that enriches global literary studies from a Southern perspective.

3.3.6. Reflective implications

The application of DRA not only produces visual data but also builds new epistemic awareness. The visualization of themes, emotions, networks, and intertextuality opens up opportunities to reread Indonesian literature as a map of cultural meaning. Within this framework, technology becomes a means to deepen *aesthetic experience*, not just a statistical tool. Thus, digital Indonesian literature can grow as a space for dialogue between *computing and contemplation*, between algorithm and taste, between globalization and Nusantara culture.

4. Discussion: Theoretical and cultural implications

4.1. Theoretical implications: Repositioning hermeneutics in the big data era

The concept of Digital Reflective Aesthetics (DRA) makes a significant theoretical contribution to the repositioning of literary hermeneutics in the era of big data. Historically, hermeneutics evolved from the tradition of textual interpretation to philosophical reflection (Gadamer) and is now transforming into the digital dimension. In this context, *digital humanities*, a new awareness emerged that meaning is not only produced through reading texts, but also through "human-machine interactions" that produce new representations [13].

DRA expands this discourse by combining the principles of reflective hermeneutics and big data analysis. While classical hermeneutics focuses on the dialogue between text and reader, digital hermeneutics focuses on the dialogue between data patterns and cultural awareness. This aligns with Hayles's [13] view that digital humanities "reconfigures the act of reading as a process mediated by computation and visualization." This means that visualization is not merely a statistical instrument, but a new epistemological medium for meaning.

In addition, the DRA model emphasizes the importance of maintaining the humanistic dimension amidst the algorithmic revolution. In the global debate, recent literature has shown concerns about the dominance of *data positivism*, namely the tendency to understand text as simply a collection of measurable data. Drucker [34] warns that "data are not neutral facts but *capta*—taken, not given," indicating that every visualization is an interpretive construction. DRA responds to this by reinstating aesthetic reflection and cultural awareness as integral parts of digital analysis.

Thus, theoretically, DRA introduces the paradigm of "reflective analytics," namely an approach that positions visualization as a hermeneutic experience—a form of "reading from a distance" that remains full of interpretive depth.

4.2. Cultural implications: Decolonizing Southeast Asian data and contexts

From a cultural perspective, DRA makes an important contribution to the decolonization of digital epistemology. In global discourse, researchers such as Liu et al. [33] and Risam [35] highlight that digital humanities practices are often centered on Western infrastructure, language, and epistemology. Southeast Asia—including Indonesia—needs a paradigm that connects *big data* with local linguistic, historical, and value contexts.

DRA plays a role here by placing the Indonesian context at the center of data reading. The cultural principle in DRA reminds us that algorithms are not value-free; every process of text categorization is an interpretive act that can strengthen or challenge the hegemony of knowledge. This approach aligns with the notion of "decolonizing digital humanities," which emphasizes the need for a theoretical framework based on *local epistemologies* [33].

In the Indonesian context, where literature develops from oral traditions, symbolism, and collective spirituality, DRA serves as a tool to revive "*rasa*" as an epistemic category. Values such as *ngelmu rasa* (Ranggawarsita) and *art as education of the soul* (Ki Hadjar Dewantara) [15] provides a reflective dimension not found in Western analytical models. In other words, data is read not only with "logic" but also with "feeling." This approach makes DRA not just a digital methodology, but also a cultural ethic of reading data.

4.3. Implications for humanistic education and literacy

In practice, DRA paves the way for reflection-based digital literature education. In many European and American universities, *digital literacy* now involves training in data visualization, automated text analysis, and *cultural analytics*. However, in Indonesia, digital literature education needs to be directed to balance technical skills and understanding of values [36].

Through DRA, students and researchers can be trained to read the results of digital analysis with reflective awareness—for example, interpreting *word cloud* not only as a word frequency, but as an expression of historical feeling and ideology. This is in line with the vision *reflective digital pedagogy* as stated by Thomas [37], who emphasized the importance of "embedding critical reflection and aesthetic awareness into computational training."

Further more, DRA can play a role in developing humanistic digital literacy, namely the ability to read and write in the data age while maintaining human values. Here, technology is not an end in itself, but rather a vehicle for developing sense, ethics, and wisdom.

4.4. Regional implications: Towards Southeast Asian digital literary collaboration

In a regional context, DRA can be part of an effort to build *Digital Humanities Network of Southeast Asia*. According to Wong and Rahim [26], cross-border collaboration in this region aims to “contextualize digital humanities through regional languages and traditions.” DRA offers a conceptual framework that researchers in Malaysia, Thailand, the Philippines, or Brunei can adapt to interpret their local corpus with a reflective perspective.

For example, in Malaysia, analysis *topic modeling* on classical epic texts has shown that visualization can reveal moral and spiritual values embedded in Malay traditions [27]. In Thailand, *poetic emotion mapping* used to understand the relationship between language, taste, and culture [30]. In this context, DRA has the potential to become a theoretical umbrella for uniting various digital projects rooted in Southeast Asian traditions—namely, building a cross-national “network of taste.”

4.5. Global implications: Rehumanization of technology

Finally, at the global level, DRA offers a contribution to the discourse on the rehumanization of technology. The academic world now recognizes that the data revolution and artificial intelligence are creating a “meaning deficit” in humanistic interpretations. Fuller and Graham [21] call this the “cultural algorithmic turn”—a cultural shift caused by algorithms that shape how people think.

DRA is the antithesis of this tendency. By positioning humans as reflective subjects, not mere data users, DRA helps restore the dimensions of empathy, meaning, and feeling to the digital space. This makes digital literary studies not merely a technological experiment, but a contemplative space for the intersection of science, art, and spirituality.

4.6. Epistemic: Technology and culture

Overall, the theoretical and cultural implications of DRA suggest that this paradigm is capable of reconciling algorithmic rationality with humanistic reflexivity. On the one hand, DRA enriches global digital humanities theory through the concept of *reflective analytics*; on the other hand, it deepens the local context of Indonesia and Southeast Asia by presenting *rasa* ('inner') as a category of knowledge. Thus, *Digital Reflective Aesthetics* acts as an “epistemic bridge” between technology and culture—making big data not just a measuring tool, but a space for interpretation and reflection on humanity in the digital era.

5. Conclusion

This study introduces and formulates Digital Reflective Aesthetics (DRA) as a new paradigm in literary studies in the era of big data. DRA arose from the need to bridge two often-conflicted worlds: the data-oriented computational world and the meaning-oriented humanities world. Through this approach, big data in literary studies is no longer viewed as a sterile collection of numbers, but rather as a dynamic interpretive space containing human aesthetic, cultural, and spiritual values.

Theoretically, DRA asserts that digital humanities is not only about technological efficiency, but also about epistemic exploration—how data can speak to the soul of culture. By combining *distant reading* (Moretti), *cultural semiotics* (Lotman), and *digital hermeneutics* (Hayles), this research shows that literary data visualization has the potential to become a new form of “aesthetic text.” Every thematic map, emotional curve, or character network resulting from digital analysis can be read hermeneutically as a living cultural artifact.

Methodologically, DRA operates through three main layers: Data, Pattern, and Meaning. The data layer marks the empirical and computational dimensions of a digital literary corpus; the pattern layer serves as an analytical representation through visualization; and the meaning layer is a reflective stage, where the results of the analysis are returned to the context of values, history, and culture. The relationship between these three layers is circular and dialogical, emphasizing that literary knowledge is always the result of the interaction between symbol systems, technology, and human consciousness.

From a cultural perspective, DRA contributes to the decolonization of digital epistemology in Southeast Asia, particularly Indonesia. By embracing local values such as *ngelmu rasa* ('inner knowledge') and *art as education of the soul* DRA demonstrates that cultural reflection can go hand in hand with technological innovation. This model shifts the orientation of digital literary research from Western methodological imitation to local and Indonesian spirituality-based meaning-making.

In practice, the application of DRA in Indonesian literary studies opens up space for the development of national thematic maps, analyses of collective emotions, networks of social figures, and intertextuality across generations. Projects such as the "Indonesian Digital Literary Atlas" can serve a dual purpose: as a laboratory for interdisciplinary research and as a platform for the conservation of cultural values through digital media.

The broader implication of the DRA is the growing awareness that computing can be a vehicle for contemplation. In an era where algorithms govern many aspects of life, this reflective approach reminds us that technology must remain rooted in human values. Digital literature, through the lens of the DRA, becomes a tool for reading not just texts but also the collective soul of society.

Ultimately, this research confirms that the future of Indonesian literary studies lies not between "technology or culture," but at the intersection of the two. *Digital Reflective Aesthetics* marks the birth of a digital humanities with an Indonesian spirit—where big data does not replace meaning, but instead opens new paths for the discovery of broader, deeper, and more humane meaning.

Compliance with ethical standards

Acknowledgments

This article was written by the Research Team at the Oral Tradition and Local Wisdom Research Group (KeRis TERKELOK), collaborate with researchers in the Indonesian Literature Department, which is a research output funded by a grant from the Institute for Research and Community Service, Universitas Jember (LP2M UNEJ). Therefore, the Research Team would like to thank the Rector of UNEJ and the Chair of LP2M UNEJ. All contents of the article are our responsibility.

Disclosure of conflict of interest

The authors declare that there is no conflict of interest for this article.

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