Digital World Literature as Database: From Coding to Representation

Kim Youngmin
Centre for Intermedial and Multimodal Studies
Department of Film and Literature Faculty of Arts and Humanities
G314, Hus F, Linnaeus University, Växjö, Sweden
English Department, College of Humanities, Dongguk University, Seoul, Korea
Email: youngmin.kim.extern@lnu.se

Abstract In what ways can the coded literature that circulates in the digital realm be interpreted in light of the logic of change? At present, pre-individual hyperlinks and hypermedia, encompassing the internet, social media platforms, blogs, hashtags, Twitter, and the world wide web, are utilized to represent the database of encoded literary texts. The correlation between the internet and AI is a captivating subject in the age of artificial intelligence. The historical progression of the World Wide Web illustrates its genetic and developmental stages: from static text-based information that was easily navigable for users to the social web, which integrated user-generated content and web applications, and finally to the "semantic web," which implemented artificial intelligence and machine learning. Transductive Intermedia, an emerging technology that integrates machine learning algorithms and user-supplied data via neural networks trained by artificial intelligence, facilitates enhanced "interoperability" and "hyper-connectivity" among diverse platforms and devices (e.g., Twitter, Facebook, or YouTube). The touchscreen or electronic interface serves as an illustration that "code" can be considered an essential element of the "text" in the form of a digital world literature database. This is apparent in electronic literature, digital poetry, and digital poetics of the present day. The aim of this article was to reassess the consequences of the challenges that the convergence of artificial intelligence, intermedia, digital humanities, and digitized/born-digital world literature presents. Furthermore, it proposes the concept of the pre-individual within the realm of transductive digital world literature.

Keywords code; database; digital world literature; transduction; world wide web

Author **Youngmin Kim** is Distinguished Research Professor Emeritus and Founding/Executive Director of Transmedia World Literature Institute and

Director of Digital Humanities Lab at Dongguk University, Seoul, Korea; Visiting Professor at Linnaeus University, Sweden; and Qingtang Scholar/Chair Professor at Hangzhou Normal University, China. He is currently Editor-in-Chief of *East West Comparative Literature Association of Korea*, Editorial Board Member of the *Journal of International Yeats Studies, CLCWeb*, *Foreigh Literature Studies*, *Interlitteraria*. He is currently President of ICLA Translation Committee, Vice President of IAELC, Executive Council Member of ICLA and Chair of 2025 ICLA Congress Organizing Committee in Seoul, Chair-Elect of CCC of ADHO, and Council Member of IATIS. His current interest is modern and contemporary poetries in English, comparative and world literature, translation studies, Digital Humanities, and AI and technology in the humanities.

Introduction: Electronic Texts, Coding, and Data

Since the 1960's, computer processing of textual data in textual and literary field has expanded enormously in intersection with digital technology in the forms of electronic texts which includes: 1) a computer text file; 2) encoded text, and 3) hypertext.[1] Employing these electronic texts, digital humanities incorporates both digitized (remediated) and born-digital materials from traditional humanities disciplines including history, philosophy, linguistics, literature, art, archaeology, music, and cultural studies, and social sciences. In the electronic texts, "encoded texts," in terms of encoding schemes, developed by SGML XML, and the Text Encoding Initiative (TEI), are crucial, since they "encode explicit structural markup along with robust metadata found in text." In her *Introduction to Digital Humanities, Concepts, Methods, and Tutorials for Students and Instructors: Course Book* (2014), Johanna Drucker is succinctly providing the nature of "mark-up" languages:

1 Specifically, 1) "electronic transcription of a literary text in the form of a computer text file," in which "characters, punctuation, and words are faithfully represented in a computer file, allowing for keyword or contextual searching" or "digital image of a physical page," which represents the original appearance; 2) "encoded text," encoding schemes, developed by SGML XML, and the Text Encoding Initiative (TEI) "to encode explicit structural markup along with robust metadata found in text"; 3) "hypertext," allowing for a multiplicity of narrative choices and making the reader an active participant in the reading experience. Perry Willett provides the definition, creation, and usage of electronic texts, along with a brief history of "eletronic texts" in his essay "18. Electronic Texts: Audiences and Purposes," *A Companion to Digital Humanities*, ed. Susan Schreibman, Ray Siemens, John Unsworth. Oxford: Blackwell, 2004. http://www.digitalhumanities.org/companion/

> Mark-up languages are among the common forms of structured data. The term "mark-up" refers to the use of tags bracketing words or phrases in a document. They are always applied within a hierarchical structure and always embedded within the text stream itself [. . .] Markup remains a standard practice in editing, processing, and publishing texts in electronic forms. The use of HTML tags is a very basic form of mark-up [. . .] Mark-up is a way of making explicit intervention in a text so that it can be analyzed, searched, and put into relation with other texts in a repository or corpus. Mark-up is an essential element of digital humanities work since it is the primary way of structuring texts as they are transcribed, digitized, or born digital. (*Introduction to Digital Humanities* 46).

In his thesis titled "Multidimensional Text Code Marking," Jerome McGann discussed the conventional approach to text reading through the lens of "marked text." This raises rhetorical inquiries. McGann claims that every piece of text we currently read is encoded:

> Now scan away (as you keep reading) and take a quick measure of the general page layout: the font sizes, the characters per line, the lines per page, the leading, the headers, footers, margins. And there is so much more to be seen, registered, understood simply at the documentary level of your reading: paper, ink, book design, or *the markup* that controls not the documentary status of the text but its linguistic status. (McGann)

As the reading progresses, the reader employs visual scanning to identify the "markup," such as font sizes, margins, and the characters in line. The content is simultaneously comprehended while observing the external structure of the entire page, including the number of characters, footnotes, pages, margins, paper, and book design. The reader can perceive the text for a multitude of purposes other than reading the content, or the text can be automatically read as if they were viewing a movie without realizing it. In the case of electronic texts, while not readily apparent in a physical book, a number of characteristics of linguistically encoded electronic documents are intrinsic to the digitized book and are therefore indispensable. A markup language is a rule-based linguistic construct utilized in electronic documents to specify the logical structure of data and denote the format in which the document

is presented on the screen. In short, the purpose of markup functions is "coding."[1]

After the information has been encoded and preserved in an electronic archive, it becomes data, and it is a challenge to comprehend and discuss the data from the informational database. It is currently argued in the field of philosophical representation research that databases are taking the place of narratives. In fact, structured data represents the domain of "integration forms" from which we await "insights." The word "data" originates from the Greek word "datum," which translates to "given." To derive meaningful information, it is necessary to "capture" the given data. Therefore, the term "capta" denotes the quantitative information that is generated or constructed using the provided data. A database is a system designed to store and retrieve data-related information. The differentiation between structured and unstructured data affects the utilization, analysis, and presentation of information. The explicit formal properties of "structured data" are imparted via the secondary levels of organization, also known as "encoding." These incorporate supplementary components, data structures (e.g., tables, spreadsheets, databases), or alternative methods to enhance the interpretation or value of the data. In contrast, "unstructured data" refers to digitally encoded information that has not been endowed with a secondary structure.

Both structured or semi-structured data and the unstructured data construct the "database" which refers to digitally encoded information in the form of texts, images, sound files, or anything else. In her essay "4A. Database and Narrative" of *Introduction to Digital Humanities Course Book: Concepts, Methods, and Tutorials for Students and Instructors* (2014), Johanna Drucker foresees the significance of databases in relation to narrative in terms of the present and future form of knowledge. Drucker asserts that narratives will ultimately be supplanted by databases when examining historical, literary, artistic, and philosophical representations. The most "impactful" and statistically near-objective method for managing, accessing, utilizing, and questioning information is through the use of a database, which stores the "metadata" that describes files and materials in a repository (34-35). Non-linear databases were placed in a competitive relationship with linear narratives that was diametrically opposed. As a result, the poetics of representation in the field of digital humanities were constructed through the comparison of selection processes in fixed narrative modes and combination processes. This claim is referred to by Drucker as "database logic" (34), and

1 For further discussion of markup and encoding, refer to Allen H. Renear's "17. Text Encoding," in *A Companion to Digital Humanities*, ed. Susan Schreibman, Ray Siemens, John Unsworth. Oxford: Blackwell, 2004. http://www.digitalhumanities.org/companion/;

becomes the logic of the new transformation that materialized in the twenty-first century the conditions of transformation or "transduction" that Simondon described during the crystalization and individuation process.

Crystalization, Individuation, and Transduction

According to Gilbert Simondon's theory of technology, "individualization" begins with "crystallization."[1] The mother liquid milieu and crystaline seed (germ/seed) crystallize. In a supersaturated solution, tiny crystal structure pieces become crystals. Crystal seeds, also known as nuclei, grow in the mother liquid, the surrounding environment, and establish their own shape and structure. A mission's cooperation between seeds in an amorphous environment and structure forms crystals. Over time, the crystal seed grows and forms a realistic structure in the "milieu." When the crystal seed grows, the surrounding environment, which was merely a potential previously, becomes a dynamic environment that encourages seed ripening and structure. Making it possible unlocks the seed's potential.[2]

Simondon's theory views "individual" as the consequence of "process of individuation" and explores the creation of the individual without presuming identification. Simondon wants to know how "pre-individual forces" as the prerequisites of natural and technological life create "individuals," such as organisms, non-organisms, biological entities (plants, animals, and humans), and technical objects. It is the process of pre-individual forces that governs the process of creation of the individual. An individual's relative reality occupies a given stage/phase of their being. The core meaning of these stages (phases/steps/stages) is "pre-individual state," and they are inherent in basic activities that expose all former state potentials. Individuation also shows the individual-milieu link. ("The Genesis of the Individual," Simondon, 300). The "emergence of individuality," an action force in the individual, is possible because "pre-individual forces" exist. These forces, called "potentialities," exist chronologically ahead of the individual and compose the individual. They have

1 For Gilbert Simondon's theory of technology, in particular, theory of the "pre-individual" and "individuation" in relation to "crystallization," see Anne Sauvanargues's "Crystals and Membranes: Individuation and Temporality." Trans. Jon Roffe. *Simondon. Being and Technology*. Ed. Arne De Boever, Alex Murray, Jon Roffe and Ashley Woodward. Edinburgh, U.K.: Edinburgh UP, 2012, 57-70. See also Gilbert Simondon's *On the Mode of Existence of Technical Objects*. Trans. Cecile Malaspina and John Rogove. Minneapolis: Univocal, 2017; and Simondon's "The Genesis of the Individual." Jonathan Crary & Sanford Kwinter. Eds. *Incorporations.* New York: Zone Books. 1992, 297–319.

2 For the discussion of crystallization both natural and artificial in terms of convergence and transduction, see the author's paper," "Transductive Convergence of Digital Humanities/Trans Media Art/World Literature," *Forum for World Literature Studies* 13.4 (December 2021).

energy, which sustains and transforms the human. Thus, the individual is always more than itself, just as "I" might be more than "I". Pre-individual, individualized, and terminated individualized exist simultaneously. Something develops from existence as it becomes something else, a process Simondon calls "transduction."

Transduction is an operation that creates itself while concretizing and organizing its surroundings. Transformation completes dimensions, magnitudes, and directions (vectors) to let an entity survive competing pressures. Movement occurs through several forces. The entity transforms itself by cutting through its pre-individual state and constructing itself from its previous resources and forces. Transduction occurs when transfer forces "dephase" and create discrimination called a problem. This inquiry arises when a process, event, dimension, or object allows individuation to create a new order. This includes creating an objectifying relation. Thus, the movement of individuation is transductive. Transduction is the most fundamental principle and method of "conversion." Transduction temporarily unites heterogeneous forces and structures what surrounds being or substance, creating a realm that supports existence and its alteration.

Simondon develops Deleuzean deterritorialization and spatialization. Transduction creates a creative leap from pre-individual past and present to an unknown future. It develops fields, regions, and an ecosystem that supports life. Instead of logical and abstract shapes, Gilbert Simondon's transduction finds, exploits, and communicates "natural contours of the Real" through creativity. Transduction is a problem-solving ability, like deduction and induction, that addresses context rather than production. Transduction relies on singularity and specificity more than deduction and induction. Transduction uses nuanced concreteness to explain the creation of beings, objects, and processes based on the logic of "eruption." Essentially, transduction is a principle and logic of convergence, making convergence a problem-solving capacity. Deleuze's *Différence et Répetitio*n (1968) and *Logique de Sens* (1969) were heavily influenced by Simondon's logic of transformation.[1]

New Database of Digital World Literature: World Wide Web, Hashtags, Twitter, Blog, Paratexts in Social Media

Now, the database of encoded literary texts has been represented through pre-individual hyperlinks and hypermedia, including the internet, social media

1 It seems that Simondon's theory of individuation and transduction profoundly influenced and inspired Deleuze. For Gilles Deleuze's explicit remark on Simondon, see "On Gilbert Simondon." *Desert Islands and Other Texts: 1953-1974.* David Lapoujade, ed. Taormina, Michael, trans. *Semiotext(e),* Los Angeles and New York, pp. 86-9

platforms, blogs, hashtags, Twitter, and the world wide web. The transductive logic underlying George Landow's notion of "hypertext" originates from textual extension systems such as glossaries, footnotes, and indexes. These systems become intermedial and hypermedial forms by linking a lexia to visual information, sounds, animation, and other forms of data. Implemented via the hypertext software *Intermedia*, George Landow's hypertext and hypermedia are considered a revolutionary framework for formally organizing texts. The notion of "hypertext" functioned as the cornerstone for Tim Barnes-Lee's hyperlinking system, which was designed to facilitate writing and reading on the World Wide Web.[1]

In 1989, Tim Berners-Lee conceived and built a prototype of an innovative hypertext initiative that he later made available to the public in 1991. This initiative utilized a web of navigable nodes to connect and retrieve information of diverse natures. By integrating multiple platforms that store data on machines, hypertext is capable of providing a unified user interface that incorporates a wide range of substantial categories of stored data, such as reports, notes, databases, computer documentation, and online systems assistance. Users are granted access to the hypertext environment via the browser application. Hypertext Markup Language (HTML)-formatted web pages continue to be the original and most prevalent document type. The markup language in question offers versatility in accommodating different categories of content—standard text, images, audio and video embeds, and scripts that facilitate complex user interactions—among others. Additionally, the HTML programming language supports hyperlinks (embedded URLs), which provide users with instant access to supplementary web resources. Web navigation, which is also called web browsing, involves the repetitive action of navigating through various websites by following hyperlinks. Web applications are webpages that function as applications for software. The information displayed on the website is transmitted across the Internet using the Hypertext Transfer Protocol (HTTP). In general, a website is composed of an assortment of interconnected web resources that share a common domain name and a common theme. While it is possible for a single web server to host multiple websites, it is worth noting that some websites, especially those that are highly visible, may be served by multiple servers. The Web has emerged as the preeminent information systems platform on a global scale. It serves as the principal interface through which billions of individuals

1 For the information concerning George Landow's hypertext and Tim Berners-Lee's world wide web, see George Landow's *Hypertext 2.0: the Convergence of Contemporary Critical Theory and Technology,* Baltimore, MD.: John Hopkins University Press, 1992; Tim Berners-Lee, "Information Management: A Proposal." March 1989, May 1990. https://www.w3.org/History/1989/proposal.html

across the globe engage with the Internet.

By employing hypertext language, it is finally possible to establish systems that guarantee the physical continuity of literary paper texts, electronic texts, and hypertexts. The text is transformed into a hypertext by means of the hypertext/hypermedia concept, allowing authors and readers to now negotiate reading paths. Hypertext, in fact, exemplifies the textual openness argued by poststructuralist theory and enables readers to acquire knowledge in a manner distinct from linear texts through non-linear association. The digitized literary works serve as prime examples of the dynamic and complex media landscapes of the internet, including paratexts, the blogosphere, Twitter, and social media, in accordance with the hypertext concept. Thes media platforms are potentially realizing the intermedial and transductive convergent literature of the digital age as a result.

Specifically, twitter and hashtags represent a transductive social media for a potential intermedial digital world literature. In her essay, "Social Media and Electronic Literature: Hashtags, Blogs, Tweets, and Insta," Christian Sukhil-Howard demonstrates the convergence of Twitter literature and hashtags through the transformation of the hashtag as a global form of transformative writing practice from one in which it functions as commentary and code. Sukhil-Howard's hashtag literature delineates literary hashtag communities through the allocation of "metadata tags" to literary forms and genres (e.g., #haiku or #veryshortstory). This enables Twitter users to efficiently navigate through and discern shared communities and interests, facilitating connections with an worldwide audience and ultimately establishing an online community for reading and writing. Simone Murray's concept of the "digital literary sphere," in her *The Digital Literary Sphere: Reading, Writing, and Selling Books in the Internet Era* (2018), encompasses "post-press literature" in which other literary works that are created or published on alternative publication platforms, such as social media sites and blogs. By utilizing hashtags, the Twitter writing community cultivates a global audience in this sphere. Texts are now embedded within hashtag communities on all social media platforms, including Instagram, Tumblr, and YouTube, where hashtags are used as community symbols.

As a rich illustration, Risam Roopika examines the potential of digital world literature in her essay "Digital Paratextuality in the Literary Marketplace," using the social media platform Twitter of British Asian author Hanif Kureish:[1]

1 For the discussion of twitter, hashtags, and digital paratexts in social media, see Christian Sukhil-Howard's essay, "Social Media and Electronic Literature: Hashtags, Blogs, Tweets, and Insta"; Risam Roopika's "Digital Paratextuality in the Literary Marketplace" in *Journal of New Techno Humanities*. March 2024.

> Hanif Kureish's tweet appeared a little over two weeks after an accident that left Kureishi without use of his arms and legs. Since his paralysis, Kureishi's Twitter timeline content has morphed from retweets of articles about himself or current events and issues in which he is invested into content dictated from his hospital bed and transcribed with the assistance of his son Carlo because Kureishi cannot presently use his hands. His bio on Twitter now includes the line, "Dispatches from my hospital bed" (Kureishi) and contents of his timeline reflect that. Kureishi's tweets often feature threads with titles denoted in all caps, followed by musings on his accident, medical procedures and staff, and his physical and psychological welfare. Weaving the tragic with the mundane, he shares his dreams and wishes for recovery along with what he is wearing on a given day. In addition, he offers anecdotes about writing and his past experiences with the dry humor characteristic of his literary work. Posts also include links to his Substack newsletter, where he republishes his Twitter threads for free, while offering access to published and unpublished stories, essays, and screenplays for paid subscribers as well as "a copy of one of my books, signed with an inked thumb (as I am unable to use my hands)" for founding members who pay at least $240 per year (Kureishi 2023a). At times, he refers to his Twitter feed as "this blog" and expresses gratitude that it has "connected with so many thousands of people," which he says, "is a good reason for living" (Kureishi 2023d). At others, he and Carlo express frustration with the ephemerality of the medium while connecting with the audience, noting that they had scheduled tweets that have somehow disappeared: "We wrote the blog and then we lost the blog. I am sure all of you have had this experience." (Kureishi 2023c)

Roopika, then, argues that Kureishi's posts can be interpreted as "digital paratexts" of the literary works, serving as a "threshold between the text and the public audiences that engage with them through the feedback loops enabled by participatory internet culture," while simultaneously these digital paratexts attain their own textual status and become integral components of the assemblages that comprise their body of work.

Roopika's use of Gérard Genette's "paratext" is thought-provoking. The extra components around a central text are called "paratext" in literary interpretation, including a "peritext" of headings, prefaces, and notes and a "epitext" of promotional announcements, interviews, critical reviews, private communications,

and author-editor interactions. In Genette's "Introduction to the Paratext" (1991), "paratext" refers to literary works' supplementary materials (e.g., author name, title, preface or introduction, illustrations) that introduce the text to readers. Genette's paratext acts as a "threshold" between written and real-world communication. Titles, forewords, epigraphs, and publishers' cover copy form a complex intermediary structure between the book, author, publisher, and reader. Paratexts—internal and external conventions and liminal devices—influence the book's public and private history. Following on Kureishi's case, Risam Roopika investigates the digital paratexts employed by authors of postcolonial discourse on social media. Through an examination of the extensive list of literary oeuvres of South Asian and Black diaspora authors, Roopik scrutinizes the digital paratextual applications of social media: "The Dangers of a Single Story," a TED Talk by Chimamanda Ngozi Adichie, and her blog posts featuring the voice of the protagonist Ifemulu from her novel *Americanah*; Instagram poetry by Rupi Kaur; "Hafiz," a Twitter short story by Teju Cole; the blog of Amitav Ghosh; Lani Wendt Young's Telesā series, which spans multiple digital platforms; and Poet *nayyirah waheed* who provides a different case of social media uses of South Asian and Black diaspora writers, Instragram. Within the domain of social media platforms, user-generated contents of these writers are most precisely characterized as "digital paratexts" which are generated indefinitely through a process of complete textual transformation. By alluding to "digital reading environments," Roopika elaborates on the feedback loops of the digital paratexts and asserts that writers have become "integral to world literature" in the digital age by producing digital paratexts via social media and websites. Roopika argues that these authors collaborate with audiences, co-author with them, and compose, thus challenging the notions of "old" and "new" media and the writer-work relationship. They do so by generating digital paratexts that give life to their literary texts. In doing so, these authors demand that we radically reimagine what it means to be "world literature," revealing the digital realm's transductive and intermedial convergent literature.

In the era of AI, the relationship between the internet and AI is an intriguing topic. The history of internet reveals the developmental and genetic phases of the World Wide Web: from the static user-friendly text-based information to the social web incorporating web applications and user-generated content, and further to the

"semantic web" which employs artificial intelligence and machine learning.[1] The World Wide Web in the form of transductive *Intermedia,* which combines user-provided data and machine learning algorithms through AI-trained neural networks but is still in its infancy, enables greater "interoperability" and "hyper-connectivity" between various devices and platforms (Twitter, Facebook, or YouTube).

Mode of Reading the Marked Text in the Database of Digital World Literature: From Human Reading to AI Reading

How can we interpret the coded literature of the digital world as it propagates via the logic of change? Moretti's distance reading technique enables users to concentrate on units that are significantly smaller (close reading) or larger (distant reading) than the text. The text itself vanishes between the two extremes, hence Moretti's motto, "less is more." It is necessary to tolerate loss to comprehend the system as a whole, according to Moretti, and theoretical knowledge is perpetually accompanied by a cost for humans. Furthermore, while reality is indefinitely abundant, concepts are abstract and deficient. World literature, in its pre-individual state, serves as an inexhaustible repository of human intellectual, sensual, and comprehensional discourse.

In "What Is World Literature?" David Damrosch describes the typology of "elliptical refraction" and proposes a double reading method of refraction. He elucidates the functioning of double refraction in the context of deciphering foreign literary works. Damrosch argues that the spatial configuration of foreign culture within a nation's literature is influenced by both the national tradition and the immediate needs of the indigenous author. A singular piece of world literature serves as a platform for intercultural negotiations. Damrosch's central argument is that receptive cultures can make numerous uses of databases containing foreign literature. An illustration of an intrinsically distinct quality that can be employed either positively to advance the development of one's own traditions in the future, negatively to point out the primitive and decadent nature of the otherness and

1 9 By applying Marshall McLuhan's "medium" to her essay on intermedial semiotics and artificial intelligence, Asun López-Varela in her essay, "Intermedial Semiotics in the Age of Artificial Intelligence. Challenges and Opportunities for the Arts," refines the developmental and genetic phases of the World Wide Web: 1) The static web provides users with text-based information; 2) The social web incorporates web applications and user-generated content; and 3) The semantic web employs artificial intelligence and machine learning.; For the discussion of twitter, hashtags, and digital paratexts in social media, see Christian Sukhil-Howard's essay, "Social Media and Electronic Literature: Hashtags, Blogs, Tweets, and Insta"; Risam Roopika's "Digital Paratextuality in the Literary Marketplace" in *Journal of New Techno Humanities*. March 2024.

advocate for its avoidance or eradication in one's nation, or neutrally to clarify the definition of one's own traditions. This indicates that various aspects of foreign literature are undergoing a transformation. In summary, Damrosch posits that world literature reflects the values and requirements of a particular culture, much like the culture reflected in foreign literature, and argues that this can be conceptualized through the lens of the oval symbol "double refraction." By integrating the two refractions—microscopic concave and macroscopic convex—through the construction of two foci—wherein foreign and native cultures generate mutually elliptical spaces—he assembled a world literature that is not mutually limiting and is connected to both cultures. is expressing a proposal to do so. In fact, what Damrosch proposes is the transformation of the human intellect through captivating and imaginative literature.

The convergence of the logic and perspective of Franco Moretti's *Distant Reading* (2013) and Damrosch's theory of world literature is consistent with Simondon's individuation and transduction theory. Prior to expressing world literature through the concept of "scale," Moretti conceptualized it as a "database." Additionally, the concept of "glocalization" in terms of "micro-scale" and "macro-scale" is linked to the literature of world literature as a database. The graphical scale bar or representative fraction (RF) of the map is referred to as the "map scale" on the map. In reality, the notion of global localization as perceived through the lenses of "up-scale" and "down-scale" consists of "ironically, simultaneous zooming-in, zooming-in, zooming techniques." The act of focusing out and inwards enlarges and contracts the object of observation, thereby providing a visual representation and explanation of the phenomenon of concurrent and competitive global movement in response to economic, political, and cultural shifts at the regional level. It may furnish a framework for elucidating the process that facilitates the transition from downscale to upscale simultaneously. Therefore, a "dynamic, interactive map" of world literature research is constructed upon the concept of scale. While the precise extent to which digital humanities, transmedia, and world literature will converge remains uncertain, a Simondonian lens of individuation and transduction can enable us to anticipate this breakthrough through the rapid differentiation and transmission of digital humanities, transmedia, and world literature in the context of the advancement of artificial intelligence in deep learning and deep reading. The logic of transduction and the process of individuation will constitute a paradigm shift in digital world literature.

Reading underpins literature. *Proust and the Squid* (2007) by Maryanne Wolf describes the brain's flexible cognitive ability when reading, stating that the brain's

"plastic design" to "make new connections among structures and circuits" is based on cognition which activates in the reading brain in milliseconds.[1] The reading brain may "elicit an entire history of myriad connections, associations, and long-stored emotions" throughout human evolution, including visual and spoken language. Using Marcel Proust and the squid to illustrate the intellectual and biological aspects of the reading brain's development and evolution (5-6), Wolf's squid shows "basic attentional, perceptual, conceptual, linguistic, and motor processes" that are based on "tangible neurological structures that are made up of neurons built up and then guided by the interaction between genes and the environment." In contrast, Wolf's Marcel Proust's "passing over," which derives from Wolf interpretation of Proust's *On Reading* (1905), represents reading as "a kind of intellectual sanctuary" where human beings could provoke their intelligence and desires to experience the Real out of their transformed imagination. These two complementary examples of human brain's reading processes which demonstrate and elaborate how various cognitive or mental processes work in the reading brain will provide the critical issue for the current research on reading cognitively in Artificial Intelligence.

What is interesting in AI is the relationship between machine learning and deep learning. Simply speaking, AI is a system miming human intelligence, and more specifically, AI algorithms learn from the data, thereby feeding data into an algorithm by processing, predicting the outcomes, identifying patterns and making decisions. In fact, Machine learning algorithms reflect Wolf's squid's reading track, learn, and suggest. In essence, machine learning is a process of training algorithms based on data, and a learning algorithm is trained on a set of "training data" to identify patterns and relationships in the data. These patterns can then be used to make predictions about new data. Also notable in AI are "Neural Networks." Neural networks, inspired by the brain, are interconnected layers of algorithms called neurons that share data. Processing more data allows them to refine their algorithms and improve. AI can recognize speech, identify photos, and diagnose diseases thanks to this learning. This "Deep learning" models complex data patterns using artificial neural networks. Deep learning algorithms mimic brain function, and layered algorithms can extract and alter features from big data sets. Deep learning can handle unstructured data including photos, video, and audio, unlike

1 For the extensive discussion of the human brain's plastic ability in relation to the act of reading as well as Maryanne's Wolf's models of Proust and the Squid in terms of the intellectual and the biological, see the author's essay, ["The Poetics of Artificial Intelligence and Posthumanism," *Forum for World Literature Studies* 12.1 (March 2020): 1-19] which is closely related to the linguistic and the neurocognitive aspects of the Artificial Intelligence.

typical machine learning. Structured data is needed for traditional machine learning. Deep learning systems can recognize data patterns without prior knowledge. Deep learning is used in image, audio, natural language processing, driverless cars, and fraud detection and in the fields of healthcare, entertainment, and other industries. How the AI performs and represents their deep learning is the hyper reading, which we can call "deep reading."

Author, Distributed Author against AI Authorship

Roland Barthes's "The Death of the Author" and Michel Foucault "What is an Author" has exemplified the contentious issue of the authorship ever since the poststructuralist theory of the human subject emerged. According to Roland Barthes' essay "The Death of the Author," the author is the writing subject and the text is the output of writing that manifests multiplicity. Barthes adds that "writing is the destruction of every voice, of every point of origin" and deems it "that neutral, composite, oblique space where our subject slips away, the negative where all identity is lost, starting with the very identity of the body writing" (142). The text is "a multi-dimensional space in which a variety of writings, none of the original, blend and clash" (146), and Barthes says the author "is never more than the instance writing, just as the I is nothing other than the instance saying I" (145). In his article "What is an Author?" Michel Foucault argues that "Our society has changed the idea of a spoken or written narrative as a protection against death. Writing is now linked to sacrifice and the sacrifice of life; it is a willful obliteration of the ego that does not require depiction in books because it happens in the writer's daily life" (117). Foucault claims that the author fails in life but generates an immortal book by ennobling his failure, substituting his death in the plurality of writing subjects. Foucault argues that a writer blurs his/her individuality by rupturing his/her position as a work's author and allowing "transdiscursive position" (131). Foucault considered Freud, Marx, and Nietzsche the inventors of "transdiscursivity" since they created unlimited possibilities and norms for other writings.

In a time when artificial intelligence was the dominant force, in this context, Dennis Yi Tenen in his essay, "Author: Anonymous, Massively Collaborative, Distributed," reintroduced the same authorial inquiries in a novel framework.[1] In domains where scholarly attention has waned regarding the conceptual significance of authorship, research on authorship is merely now beginning to flourish and diversify in the post-authorship era, according to Tenen. It has become "routine to

1 See Dennis Yi Tenen's "Author: Anonymous, Massively Collaborative, Distributed." *Journal of New Techno Humanities.* March 2024.

engage in such activities to watch a television show written by dozens of writers, follow a social media robot who dabbles in poetry, cite an encyclopedia entry written by hundreds of contributors, and offer commentary on a literary work written by a troupe of Sulawesi macaques." Tenen urges us to pay attention to three overarching trends in contemporary authorship that are both commonplace and under-theorized: "texts that are authored by means anonymously or pseudo-anonymously, massively collaborative, and attributed." This is in the age of new media, which is revolutionary in the sense that it normalizes the avant-garde.

Tenen further argues that anonymity enables numerous journalists to frequently collaborate on articles and express themselves in a unified manner in "a hive mind," which provides "a unified sense of prose style" and "the authority of a collective, free from individuated ego." Tenen offers an illustration of this dynamic hive mind: Wikipedia. The indicators for dynamic hive mind included comprehensiveness, currency, intelligibility, and dependability. This dynamic is readily apparent on "Wikipedia," an exemplar of contemporary encyclopedia creation and a massively collaborative undertaking that encompasses over 26 million articles translated into over 250 languages. Wikipedia seems like a radically participatory institution: one to which everyone is invited to contribute, although research into authorship practices on Wikipedia reveals hidden complications. As the Wikipedia project increased, this product of a collective intelligence reflects the socio-economic problems of the underlying collective. "Distributed model of authorship," as described by Tenen, consists of "multiple human contributors" and "organic, algorithmic, and chance elements of composition." Distributed authorship is based upon an environment of "a continual dialog with other authors, automated editorial algorithms, and the platform itself," and is composed of "charting the literal flows of information between minds (wetware), computer programs (software), and infrastructure (hardware).

Conclusion: Digital World Literature as Database

It is said that nothing novel exists beneath the sun. Everything was in its pre-individual state, mirroring its preceding state. Nevertheless, the endeavor to integrate the domains of literature, media, and digital humanities is a captivating and intricate undertaking. In her *The Poetics of Indeterminacy* (1981) and *Poetry On & Off the Page* (1998), Marjorie Perloff endeavors to situate the evolution and formation of art and technology within the technological and digital culture of the late 20th century. Poetic language, according to Perloff, is a system of signs with its own semiological interconnections, "simultaneously striving towards and refusing to become significations" (18), as opposed to a transparent glass indicating something

external. Perloff's conceptualization of poetic language, which she alludes to in relation to transparency and opacity, can be situated within the framework of the signified and the referent of language. Indeed, the signifier in poetic expression is perpetually "superfluous," burdened with potential meanings and thus more accurately a "cipher" which raises the inquiry into the material nature of "code." The influential *The Language of New Media* (2000) by Lev Manovich challenges the fifth principle of "transcoding" of new media, which entails the "computer layer" absorbing concepts, artifacts, and presuppositions from the "cultural layer." As demonstrated by the touchscreen or electronic interface, "code" may be regarded as an integral component of the "text" of digital world literature as database. This is evident in contemporary digital poetry, digital poetics, and electronic literature. The objective of this paper has been to reconsider the consequences of the challenge posed by the convergence of artificial intelligence, intermedia, digital humanities, and digitized/born-digital world literature. Additionally, it puts forth the notion of the pre-individual of transductive digital world literature.

Works Cited

Adichie, Chimamanda Ngozi. *Americanah.* NY: Vintage. 2013.

Barthes, Roland. "The Death of the Author." *Image/Music/Text*. Trans. Stephen Heath. New York: Farrar, Strauss, and Girous, 1977. pp. 142-38.

Britannica, The Information Architects of Encyclopaedia. "transduction." *Encyclopedia Britannica.* 14 Dec. 2021. Available at: https://www.britannica.com/facts/transduction-

—. "crystal." *Encyclopedia Britannica.* 10 March. 2024, Available at: https://www.britannica.com/science/crystal/Structure. Accessed 10 March, 2024.

Damrosch, David. *What Is World Literature?* Princeton and Oxford: Princeton UP, 2003.

Deleuze, Gilles. *Difference and Repetition.* Trans. Paul Patton, New York: Columbia UP, 1994.

—. "On Gilbert Simondon." *Desert Islands and Other Texts: 1953–1974*, edited by David Lapoujade, translated by, Michael Taormina. Los Angeles and New York: Semiotext(e), pp. 86-9.

—. *The Logic of Sense*. Trans. Mark Lester and Charles Stivale. New York: Columbia UP, 1990.

Drucker, Johanna. "4A. Database and Narrative." *Introduction to Digital Humanities Course Book: Concepts, Methods, and Tutorials for Students and Instructors.* Los Angeles, Calif.: UCLA, 2014.

—. "6A. Text Encoding, Mark-Up, and TEI." *Introduction to Digital Humanities Course Book: Concepts, Methods, and Tutorials for Students and Instructors.* Los Angeles, Calif.: UCLA, 2014.

Flanders, Julia and Domenico Fiormonte. 2007. "Markup and the Digital Paratext." *Digital*

Humanities 2007 Book of Abstracts. Alliance of Digital Humanities Organizations, 60-61. https://www.ideals.illinois.edu/items/2518.

Foucault, Michel. "What is an Author?" *Language, Counter-Memory, Practice: Selected Essays and Interviews*. Ed. Donald F. Bouchard. Ithaca, New York: Cornell UP, 1977.

Fusillo, Massimo, and Mirko Lino. "Hypertextual Consciousness and Intermediality in Literature: Postmodern Fiction and Maximalist Novel." *Journal of New Techno Humanities*. March 2024.

Genette, Gérard. "Introduction to the Paratext." Translated by Marie Maclean. *New Literary History,* vol. 22, no. 2, 1991. pp. 261-272. https://doi.org/10.2307/469037.

Ghosh, Amitva. 2011a. "'Coolitude' and Khal Torabully." *Amitav Ghosh*, October 1. Available at: https://amitavghosh.com/blog/?p=1210.

—. 2011b. "Letters." *Amitav Ghosh*, April 27. Available at: http://amitavghosh.com/blog/?p=56.

—. 2011c. "Sir Arthur C. Clarke: Parts 1, 2 & 3." *Amitav Ghosh*, May 31. Available at: https://amitavghosh.com/blog/?cat=16.

Ghosh, Amitav. 2012. "On Blogging: 4 of 4." *Amitav Ghosh*, June 4. Available at: https://amitavghosh.com/blog/?cat=21.

Hayles, N. Katherine*. How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago, IL: U of Chicago P, 1999.

—. *How We Think: Digital Media and Contemporary Technogenesis*. Chicago, IL: U of Chicago P, 2012.

Heidegger, Martin. "The Question Concerning the Technology." *Basic Writings,* translated and edited by David Farrell Krell. San Francisco: Harper & Row, 1993.

Howard-Sukhil, Christian. "Social Media and Electronic Literature: Hashtags, Blogs, Tweets, and Insta," *Journal of New Techno Humanities*. March 2024.

Kim, Youngmin. "The Poetics of Artificial Intelligence and Posthumanism," *Forum for World Literature Studies,* vol.12, no.1, 2020, pp. 1-19.

—. "Transductive Convergence of Digital Humanities/Trans Media Art/World Literature." *Forum for World Literature Studies,* vol.13, no.4, 2021, pp. 693-713.

Kureishi, Hanif (@Hanifkureishi). Twitter timeline. Available at: https://twitter.com/hanifkureishi.

Kureishi, Hanif. 2023a. *The Kureishi Chronicles*. Substack. Available at: https://hanifkureishi.substack.com.

—. 2023c. "LIFE IS NOT BEAUTIFUL / Yesterday, as you might have heard from my so Carlo, was a bit of a catastrophe because we wrote the blog and then we lost the blog." 21 Jan. 2023. Available at: https://twitter.com/hanifkureishi/status/1616878872728928264.

—. 2023d. "But writing this blog, which has connected with so many thousands of people, is a good reason for living." Twitter. 22, Jan. 2023. Available at: https://twitter.com/Hanifkureishi/status/1617240756267122690?s=20&t=U6s_g0OQGbBRQjFLEpwCVQ.

Landow, George. *Hypertext 3.0: Critical Theory and New Media in an Era of Globalization*. Baltimore: Johns Hopkins UP, 2006.

—. *Hypertext : The Convergence of Contemporary Critical Theory and Technology*. Baltimore: Johns Hopkins University Press, 19920.

López-Varela, Asun. "Intermedial Semiotics in the Age of Artificial Intelligence. Challenges and Opportunities for the Arts." *Journal of New Techno Humanities*. March 2024.

McGann, Jerome. "16. Multidimensional Text Code Marking." Available at: http://digitalhumanities.org:3030/companion/view?docId=blackwell/9781405103213/9781405103213.xml&chunk.id=ss1-3-4. Accessed 14 November 2021.

Manovich, Lev. *The Language of New Media.* Boston: The MIT Press, 2000.

Moretti, Franco. "Conjectures on World Literature." *New Left Review*, vol.1, 2000, pp. 54-68.

—. Distant Reading. N.Y.: Verso Books, 2013.

Murray, Simone. *The Digital Literary Sphere: Reading, Writing, and Selling Books in the Internet Era*. Baltimore: Johns Hopkins UP, 2018.

Perloff, Marjorie. *Poetry On & Off the Page*. Evanston, IL: Northwestern UP, 1998.

—. *The Poetics of Indeterminacy.* Evanston, IL: Northwestern UP, 1999.

Roopika, Risam. "Digital Paratextuality in the Literary Marketplace." *Journal of New Techno Humanities*. March 2024

Sauvanargues, Anne. "Crystals and Membranes: Individuation and Temporality." *Simondon. Being and Technology,* translatied by Jon Roffe and edited by Arne De Boever, Alex Murray, Jon Roffe and Ashley Woodward. Edinburgh, U.K.: Edinburgh UP, 2012, pp. 57-70.

Simondon, Gilbert. *On the Mode of Existence of Technical Objects,* translaited by Cecile Malaspina and John Rogove. Minneapolis: Univocal, 2017.

—. "The Genesis of the Individual." *Incorporations,* edited by Jonathan Crary & Sanford Kwinter. New York: Zone Books. 1992, 297-319.

Sukhil-Howard, Christian. "Social Media and Electronic Literature: Hashtags, Blogs, Tweets, and Insta." *Journal of New Techno Humanities*. March 2024.

Swift, Elizabeth. "Interactive Literature and Art in Temporality." *Journal of New Techno Humanities*. March 2024.

Tenen, Dennis Yi. "Author: Anonymous, Massively Collaborative, Distributed." *Journal of New Techno Humanities.* March 2024.

Willett, Perry. "18. Electronic Texts: Audiences and Purposes." *A Companion to Digital Humanities.* Ed. Susan Schreibman, Ray Siemens, & John Unsworth. Oxford: Blackwell, 2004. Available at: http://www.digitalhumanities.org/companion/

Wolf, Maryanne. *Proust and the Squid*. New York: Harper Collins, 2007