MULTILINGUAL AFRICAN DIGITAL SEMIOTICS AND E-LIT JOURNAL

MADSEJ

AFRICAN ELECTRONIC LITERATURE ALLIANCE &
AFRICAN DIASPORIC ELECTRONIC LITERATURE
(AELA & ADELI)

DIGITAL HUMANITIES & INTERDISCIPLINARY SCHOLARSHIP

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Editorial: Digital Humanities and Interdisciplinary Scholarship

Since the inception of the African Electronic Literature Alliance & African Diasporic Electronic Literature (AELA & ADELI) by Yohanna Joseph Waliya in 2021 under the aegis of the Electronic Literature Organization, and in collaboration with Prof. Richard Ajah of the University of Uyo, Nigeria, Prof. Mourad El Fhali and Prof. Abdelmoumin El Azouzi of the Sidi Mohammed Ben Abdellah University, Morocco, and Prof. Tunde Ope-Davies of the University of Lagos, Nigeria, this movement continues to create an avenue via its African Electronic Literature International Workshop and Conference (AELAIWC). This initiative has been supported by different academic institutions in Africa such as University of Lagos, University of Uyo, University of Calabar and Sidi Mohammed Ben Abdellah University, Morocco, providing a platform through which African scholars across the globe have been trained on the basics of digital literary scholarship and practices in order to position the future of the humanities scholarship in Africa. In other words, AELAIWC provides capacity building forum to the young African scholars by teaching digital research methodology and computational analysis in all fields of the humanities especially literature and language. Thus, the birth of African modern interdisciplinary scholarship in Digital Humanities is evident. Furthermore, computational interception in the humanities now tilts towards the unification of the whole humanities under the umbrella of what is popularly known today as Digital Humanities, fostering collaborative and interdisciplinary research. This is a sort of returning to the philosophy of the medieval period whereby all disciplines fed from the same philosophical tools and institutions.

Hence, this Volume 1 Issue Number 2 of MADSEJ centres on the Digital Humanities and interdisciplinary scholarship in Africa. It contains a peer-review collection of the major discussions at the AELAIWC2023 and few works from other reputable experts in electronic literature and its subgenres.

In this volume, Caitlin Fisher, a distinguished professor at the York University, Canada and the present President of Electronic Literature Organization, who was the AELAIWC2023 Keynote Speaker II, argues that Western narrative traditions are epistemologically challenged by spatial and immersive storytelling vis-à-vis African narratives. Her article presents the successful African XR projects, including Joel Kachi Benson's award-winning *Daughters of Chibok* and constructive initiatives from Black Rhino and Electric South. Despite the strides of the African immersive storytelling at global scale, it remained inaccessible to the readers because of the socioeconomic gab in the African society and the unaffordability of the VR lenses. Her discussion explores the meeting point of the XR with Internet of Things (IoT) and AI. At the end, Caitlin's paper proposes generally that distinct experimentation is essential for the advancement of immersive storytelling medium particularly cropping more African oral storytelling traditions into participatory practices. This will make future immersive storytelling more Afro-centric globally, facilitating the export of African culture and civilisations.

In his paper, Benharrousse of the American University in Cairo, Egypt, engages the readers with the digital capitalist market value of digital cultural productions and the neoliberal structures that resist the emergence of the electronic literature as a counter-market practice within digital culture. Therefore, the author raises the question of theorising digital literary market value and political engagement in the electronic literature. Funkhouser concerns himself with presenting the comprehensive overview of digital poetry evolution from the late 1950s to the trending AR poetry applications. He establishes the fact that digital tools have redefined poetic practices and poetics synchronically and diachronically in this digiral era.

Teaching electronic litearature to the Gen Z has taken a new dimension whereby teachers of literature must recognise the trending digital tools and provide literary teaching techniques that match with this generation. These are the preoccupations of Bassey and Larsen's paper. They lay emphasis on the obtainable digital tools within the locality of the institution particularly in Nigeria as a starting point to encourage the use of technologies as pedagogical tools.

As for John and Awelewa, they take the readers to the diasporic Nigerian writers-Chimamanda Ngozi Adichie and Ben Okri who have enjoyed the privileges of the digital technology to horn their influence in the global literary landscape. Their research reveals that digital data visualization offers new knowledge patterns into the intersection of migration and literary recognition as contributions to Nigerian by extension African digital literary studies.

We wish to acknowledge all our authors especially Dr. Rachid Benharrousse of the American University Cairo, Egypt, who assisted us with drafting the permanent template for the journal.

Richard Ajah & Yohanna J. Waliya

[1] University of Uyo, Uyo, Nigeria.
E-mail : richardajah@uniuyo.edu.ng

[2] Département des Études Littéraires et Culturelles, Le Village Français du Nigéria (Centre Interuniversitaire Nigérian d'Études Françaises), Badagry, Nigeria.
E-mail : yohannawaliya@frenchvillage.edu.ng

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Immersive Storytelling and an Afro-centric Future for XR

Caitlin Fisher
Cinema and Media Arts/Immersive Storytelling Lab, York University, Canada.
E-mail: caitlin@yorku.ca

Abstract

This paper opens a conversation around a possible Afro-centric future for Immersive storytelling, particularly in XR, one that might challenge Western-centric approaches to XR (extended reality) technologies and storytelling methods. The author argues that African creators across the continent's 54 countries offer vital perspectives that could reshape global XR practices. Drawing on theoretical frameworks from postcolonial scholars like Trinh T. Minh-ha and Jaishree Odin, the paper positions spatial and immersive storytelling as an epistemological challenge to Western narrative traditions. It highlights successful African XR projects, including Joel Kachi Benson's award-winning VR work and initiatives from studios like Black Rhino and Electric South, while acknowledging persistent access barriers. The discussion explores the convergence of XR with Internet of Things (IoT) and Artificial Intelligence, proposing that diverse experimentation is crucial for the medium's maturation. The paper advocates for moving beyond mimetic approaches and mobile-centric development to embrace more varied storytelling traditions, particularly those grounded in African orality and participatory practices. This research suggests that an Afro-centric future for XR could significantly expand the medium's potential for global storytelling and cultural expression.

Keywords: XR, immersive storytelling, African electronic literature, postcolonial digital practices, emerging media

Résumé

Cet article ouvre une discussion sur un avenir possible afrocentrique pour la narration immersive, en particulier dans le domaine de la XR (réalité étendue), qui pourrait remettre en question les approches occidentalo-centrées des technologies XR et des méthodes de narration. L'auteur soutient que les créateurs africains issus des 54 pays du continent offrent des perspectives essentielles susceptibles de remodeler les pratiques mondiales en matière de XR. En s'appuyant sur des cadres théoriques proposés par des universitaires postcoloniaux tels que Trinh T. Minh-ha et Jaishree Odin, l'article positionne la narration spatiale et immersive comme un défi épistémologique aux traditions narratives occidentales. Il met en lumière des projets XR africains réussis, tels que l'œuvre primée en VR de Joel Kachi Benson et les initiatives de studios comme Black Rhino et Electric South, tout en reconnaissant les barrières persistantes en matière d'accès. La discussion explore la convergence de la XR avec l'Internet des objets (IoT) et l'intelligence artificielle, en suggérant que des expérimentations diverses sont cruciales pour la maturation de ce médium. L'article plaide pour un dépassement des approches mimétiques et du développement centré sur les appareils mobiles, afin d'adopter des traditions narratives plus variées, notamment celles

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enracinées dans l'oralité africaine et les pratiques participatives. Cette recherche propose qu'un avenir afrocentrique pour la XR pourrait considérablement élargir le potentiel du médium en matière de narration mondiale et d'expression culturelle.

Mots-clés : XR, narration immersive, littérature électronique africaine, pratiques numériques postcoloniales, médias émergents.

1.0. INTRODUCTION

I'll need to start by saying that the original title for this paper - *African Electronic Literature on Immersive Platforms - techniques and practices for Africans - was* assigned to me as a placeholder – and one that I encountered this week with trepidation. Far from having a great deal of lessons for Africans I'll offer, instead, based in my experience, that African creators, in 54 countries, with multiple languages and histories, have instead a great deal to teach me and the global XR community as we consider the promise and potential of immersive storytelling – both in terms of new stories, and also in terms of new approaches, methods, investments and storytelling traditions that could profoundly impact the poetics and the future of immersive storytelling for everyone (Figure 1).

Figure 1: Outtakes of a volumetric XR experience

As a graduate student I remember Trinh T. Minh-ha trying to figure out what a postcolonial filmmaking practice could be and wondering whether the poetics of hypertext literatures might concretize a form of speaking alongside that she advanced as being a space of potential (Trinh). Odin (598-630), too, would theorizing hypertext and linking strategizes as being resonant with demands for new ways of thinking and being in the world: a feminist, postcolonial poetics made possible by the affordances of emerging media.[1] Inspired by these voices and reinforced by my own experiences of making stories that disrupt teleology and play with holding multiple truths together in tension - a daughter's circular pathway of 'and and and' (Gagnon and Knights 88-93) - I see spatial and immersive storytelling as constituting an epistemological challenge to the western philosophical line, to dominant forms of narrative pleasure and to traditional academic form. A radical practice full of promise. But one that has not nearly realized its potential.

I work in XR - a field that includes virtual, augmented and mixed reality, but that, for me, exists in its most potent form when it combines the digital with the analogue, where the physical world and the digital make meaning co-constitutively and local context meets dreaming. XR has a relatively long history of technological development, but remains an emerging storytelling genre, and one whose development would be strengthened by new voices, and new approaches - works grounded in orality and participatory storytelling traditions, for example, and works that disavow traditional heroes' journeys. Works that approach audiences in new ways. Creators working outside Western storytelling traditions who, like Trinh in the context of film, might look at XR and ask what new kinds of stories and ways of communicating might be

supported – and the work those stories could do in the world. We also need creators interested in proprioception – haptics and movement. And all of the senses - XR has the capacity to engage the full sensorium, yet so few existing works do - and we need diverse creators from diverse traditions to experiment, interrogate and explore XR's grammars and poetics as well as investigate new themes and content, in order to flourish.

I hope, then, that this is the beginning of a vital conversation where we can start to share knowledge and perhaps find ways to work together and support each other in the development of truly global Immersive storytelling practices. I will start by sharing some of my own story, my hot take on the field, and approaches to immersive platforms, techniques and practices *as I understand them, from my own location and contexts.* But to truly move toward an Afro-centric future for XR you will need to take up where I leave off and talk back to these ideas, or carry them forward to new places. This is not, in other words, a definitive vision - it is, rather, a moment of invitation.

Figure 2: My first lab, with Intersense tracke

For 20 years I've worked at the intersection of science and story, engineering and humanities, founding one of the first augmented reality labs in a fine arts context anywhere in the world – in large part owing to the generosity of colleagues at Georgia Tech, in Atlanta (Figure 2), who gave me the gift of code, advice on infrastructure and endless generosity and inspiration. I also received a large Canada Foundation for Innovation grant to purchase equipment (Figure 3). That's what it takes to start a lab: a collision of luck, resources, effort and generosity.

Figure 3: Some early experiences in the lab – trackers and fogscreen

My working life has largely been about bringing a diversity of humanists, filmmakers, screenwriters, poets, children, historians and visual artists into collision with amazing computer vision scientists and electrical engineers to build new stories for new screens … mostly works that I think help grow the field of electronic literature, but also projects that advance the digital humanities more generally … and I'm thrilled to share some of the lessons of that work here today on the occasion of the African Electronic Literature Alliance conference. Here are a few pictures, showing some representative work past and present (Figure 4).

Figure 4: Few pictures representing past and present works and me at Cinespace Studios on the volumetric stage, 2021

So, I'm speaking to you from my location as the director of an early AR lab in the fine arts, founded on cross-disciplinary, international collaboration in the global North.

I'm also speaking to you as a writer with a research-creation practice centrally organized around the creation of augmented reality interfaces, XR literatures, creating drag-and-drop AR tools for non-programmers, a practice of making small worlds, haunted cabinets, first-personal confessionals, treasure boxes, book objects and large-scale cinematic palimpsests, objects to think with and through, VR novellas and long-form interactive narratives. This work has also informed hardware and software designs and a generation of student work in this area and is now undertaken under the umbrella of the immersive storytelling lab.

But as I said, my take is necessarily partial. And I'll mostly stick with my sweet spot of XR (meaning virtual, augmented and mixed reality) today.

This is an energizing and pivotal moment for building and understanding immersive storytelling across established and emerging technology and, in a way, one that returns me to my early enthusiasm of the early 2000s, while enabling all of us to think about narrative futures for the next 20 years.

It's exciting to address you here because I really feel that we're on the cusp of something incredibly exciting– and from a personal perspective, I feel on the verge of being able to more fully realize many of the dreams that at least *I've* had over the last 20 years when I began my work in augmented reality, at a time of so much excitement, of accidents of generosity in those early days of opening up the Virtual Reality caves to writers.

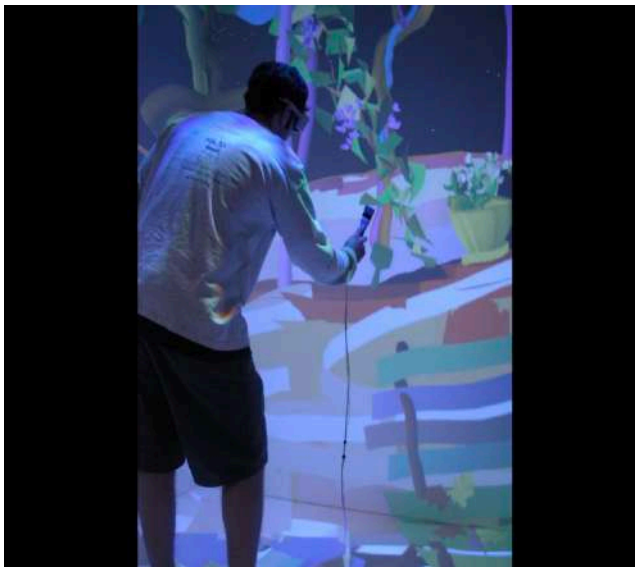

Figure 5: Cave Painting by my MA Student

I remember my first encounter with the VR cave at Brown University, exploring a model of the human heart, the Parthenon… with multiple people in the experience even if only one person's head was being tracked and everyone else was a victim of gentle latency and possible nausea.

No matter: one of the things that sticks most in my mind and that, in rear view, I can see inspired so many of the things that I did later, was an MA student's work I saw there called *Cave Painting*

(Figure 5). It was like being inside Adobe Illustrator or Photoshop. Picking up the brushes, and creating a sculpture midair with no intermediary of code - being able to shrink my creation, throw it into the abyss, retrieve it, enlarge it, inhabit it - changed my life. I probably spent about ten minutes total in that experience and it has been a haunting ever since, leaving me with a feeling I have tried to recreate for people in at least half of the things I've ever made.

Figure 6: Artist Wallace Edwards creating a VR piece inside the VR environment Multibrush

The reason I'm telling this story is that - flash forward - if you have a VR headset you can now just download Multibrush - Tiltbrush (Figure 6) before that –and experience much the same thing. In your living room. And a new generation of VR experiences is harnessing the capacity to use immersive environments as authoring environments. We don't even talk about it. It's a Copernican shift in the West and one that is coming to Africa, so get ready.

Small children use Multibrush in my lab. And the artist shown here – Wallace Edwards - and my younger daughter co-created a children's book inside this tool, drawing collaboratively in real time. No coding required. They could talk to each other inside the environment, import text and image files, and work together to draw in three dimensions and animate the virtual reality storybook. I could come up with many cognate examples, across media, related to the larger world of extended digital narratives.

But for this moment, let's stick with VR (see Figure 7 below).

Figure 7: screenshot of the VR piece "The Cat with a hundred eyes" created by Wallace Edwards and Stella-Charles Fisher inside Multibrush VR

Consumer caves that harness the ability to create in real time inside a What You See Is What You Get 3D environment (Figure 8) constitutes an incredible an expressive tool that changes the way we can experiment with scale, the relationship with our bodies to structures, *including narrative structures*, and challenges us to think deeply about what it means to create with machines.

Figure 8: Early handheld AR paper-based works, including burning book

These were also the early days of still feeling awe as a piece of paper came to life, like a Harry Potter newspaper, and where we engaged in tiny and powerful experiments animating XR doll houses, playing with physical film editing, and imagining new kinds of texts for spatial and interactive environments. Heady days when it felt like the possibility of entire new forms was within grasp.

And today feels like that, too, for the first time in probably a decade.

At the same time, we do *not* have enough global experimentation and not enough movement away from the mimetic. There is so much more that we can do – and need to do – beyond realism. There are both artistic and political rationales here. You can be entering at the moment of a great possibility.

Figure 9: Head mounted lenses early experiment

A lot of things that we started off with early on, in that long-ago very well-resourced lab involved walking seamlessly through the world wearing these head mounted displays. I think one of the reasons why I often show a lot of early experiments (Figure 9) at these talks is that so many of the works that we made in the lab were absolutely landlocked and seen by so few people.

And while handheld devices –cellphones and tablets – opened up this work to wider audiences (Figure 10), it also disrupted the creative trajectory of so much of what was happening in those spaces. I have a love-hate relationship with these devices.

Figure 10: My AR work Castle on iPhone

There were tradeoffs, of course. In Africa where cell phone usage and penetration out-strips all other ways of accessing XR, phones are an absolute necessity for even getting started – and Google Cardboard, for example, provided an important viewing context and created audiences here. Writing for mobiles phones and tablets is accessible, then – and that's a big one – and I do love using my phone as a magic looking glass, a window to another world (even now, as you'll see at the end of this talk) but when every story for AR becomes a magic looking glass it does limit the potential of XR for storytelling in critical ways – what kind of stories work best when you have to hold your phone up in front of the world? How is the length of those stories affected? How does it change how you move your body inside the story? How might you write differently for a more seamless experience where augmentation was through AR glasses? AR contact lenses? What kind of climates does an XR mobile device story favour? A positive aspect of the rise of cell phone XR e-literature is the move to relatively more affordable, computer vision-based augmented

reality. But it's a very specific subgenre of augmented reality storytelling that too often in the contemporary moment stands in for the entire thing. So, while there are huge practical advantages and we can reach wider audiences in this moment by creating XR works for phones (Figure 11), we would benefit from seeing creating XR works for cell phones as a productive constraint and not the only, or best, delivery system for the future.

Figure 11: Early tablet story, Banff Centre for Creativity

I liken this to the way that amazing writing systems for hypertext in the 90s and early 2000s like Storyspace were basically killed by 'good enough' systems with widespread access and appeal like eliterature for web browsers like Mosaic. Early and powerful tools that were built in part with a deep understanding of narrative theory and what it means to craft and to experience stories were flattened by web browsing technologies.

XR through phones is still largely experienced as a visual medium, with advances in sound and an understanding of sound's critical function in maintaining immersion just beginning to be better understood. I'd argue that other senses – smell and haptics – are even less understood. The capacity of augmented and mixed reality to harness the power of the physical world working co-constitutively with the digital seems, as I said, to have been set back with the rise of smartphones as go-to platforms, however - a mediating screen we hold in our hands is not the future of XR.

Prior to this time, there were a lot of really interesting ideas about proprioception, room-scaled and even city-scaled stories and a dream for transparency of the technology as you walk through a storyworld that we are only just starting to appreciate again. The idea of technology just falling away also begs critique, for sure, but it's still pretty cool to walk through a digital environment and see perfectly registered ghosts or hold small-scale, animated people in your hands, without experiencing things through the frame of your phone.

The future of XR electronic literatures and experiences involves all of our senses, haptics - touch - and smell, as well as sound and sight, immersing us in the full sensuousness of the world. So, if you've only ever seen augmented reality on a phone, you have to realize that it's a really partial view of what you could imagine if you had an immersive system, especially those of us in cold climates like Canada, where nobody wants to have their hands out in a long form extended digital narrative in the snow.

Another aspect to my point that a lot of development in the early 2000s was interrupted by the idea that we could actually make things available easily through apps through smartphones, and that audiences would be basically bringing their own equipment is that creators in Africa don't have so much catching up to do – we've all been working on our phones ;)

Small labs like mine long ago lost comparative advantage in building our own tools responsive to the kinds of stories we wanted to make – commercial, off-the-shelf tools were simply more powerful than the tools a small lab can build. Most

of us working in the field are still using Unity, Unreal engine and new web-based (WebXR) augmented reality tools like 8th Wall, that are accessible to the extent authors can engage with the cloud and some, like Adobe Aero, that allow experiences to be created on a phone instead of requiring a computer.

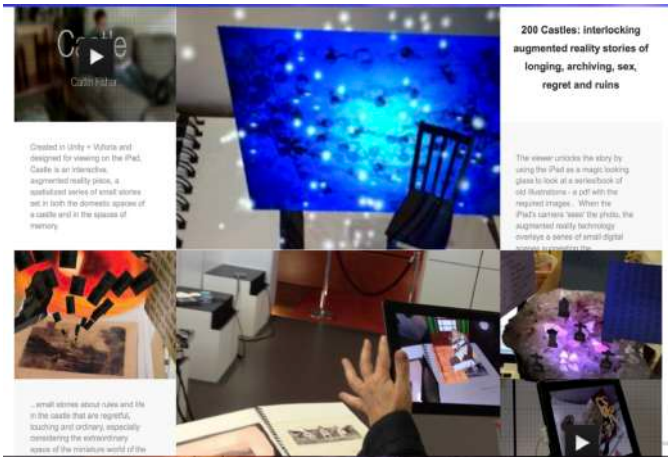

Figure 12: 200 Castles exhibition, Biblioteque Nationale, Paris

Here's another origin story:

Figure 13: Caitlin in early NVIS HMD

XR was always incredibly expensive – and, at first, inaccessible to most, even in countries like Canada.

I purchased my first optical see-through head mounted display (HMD) in 2004 for over $100,000 US. It was military grade and the first thing I did was stick the sensor to the wrong place… two inches off from where it really should have been… meaning for months I thought military grade wasn't so hot ;)

At a time when we didn't really talk about unboxing as performance, I unboxed the headset to great fanfare and in front of a biggish crown of colleagues. I put it on. It was super heavy. It was tethered. The cord was actually so heavy that later on during demos we always had a grad student carry it like a bridesmaid so the HMD wouldn't actually pull away from someone's head while they were in the middle of things. It had a field of view about 30 degrees. It was disappointing. It was also magical.

And it was the start of a long series of moments that led me to theorize that the trick of working in immersive storytelling is imagining your story and your audience and your hardware and your software at least a decade into the future. Because everything I touched was really not quite right in some aspect, physically and also conceptually too clunky. Even so: The too-heavy HMD being tethered, relegating us to indoor experiences, working with very tricky authoring systems … all these things were springboards to new ways of imagining what we needed and what we wanted.

This is a working trick all of us can use – imagine what you might have a decade from now and start to write for the devices that don't yet exist.

And now so much of what I thought I needed and thought I wanted is available to me, at least in Canada. My current headsets look much the same – but lighter, untethered, cheaper and with better field of vision.

So, I want new things now. New optical see-through headsets, new tools, new possibilities for dissemination of even large-scale complex works. new intersections. Globally, we're on the cusp of seeing so much fully realized. But those HMDs aren't manufactured in Africa and often can't even be shipped – and to be in on the ground floor of the

conversation that needs to change - or African companies need to create rival HMDs built right here.

While I don't think the future of XR is centrally about tools, tools matter. Hardware matters – and it matter that here in Africa access to HMDs is difficult. We need to figure out how to get more HMDs here because engaging immersive texts hands-free, and, ideally, free of feeling stupid with these things on our heads - will have big consequences, finally returning us to a more natural way of engaging with content that was widely understood to be the only way to work before smartphones and the magic looking glass took over.

That's take-away number two: made in Africa technology development or licensing may be necessary not to miss out on the next wave of development. You need made-in-Africa platforms as well as global stages in addition to affordable consumer-grade VR headsets, easier to use expressive tools that do not require coding, local advancements in hardware and software and workshops in how to create using these tools, maybe leveraging cognate skills. If this happens, Africans will become creators in larger numbers and could be global leaders, in the XR space – not simply because you will be part of the conversation, but also because of the possibility of unique takes on both content and narrative form.

In anticipation of this, what follows is an overview of past practices, a discussion of what we can already do in the now and some of the items on my own wish list for the future. Your own working context will doubtless change what you hope for here and what you see as possible in the immediate moment.

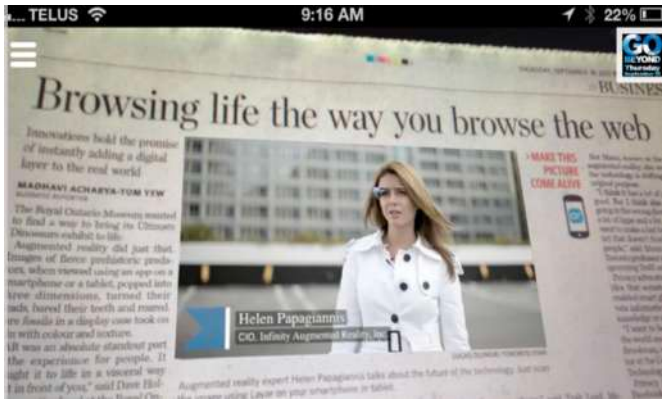

Figure 14: former AR Lab trainee and now global XR pioneer Dr. Helen Papagiannis in early glasses

2.0. TECHNOLOGICAL CONTEXT

Over 2.5 quintillion bytes of data are now being generated every day. Five years ago, IBM Researchers noted that "90 percent of the data that exists today was created over only the last two years" (Wheeler) so that doesn't even capture recent development and massive data generation in AI over the recent period.

Augmented reality is similarly expanding – and has already changed how we work, consume and create. AR alone – not even considering the full XR spectrum, let alone a spectrum that would include Artificial intelligence and the Internet of things (IoT) - is now a $120-200 billion industry with huge implications for industry, education, health and human society - yet the politics, poetics and possibilities of the coming augmediated society are still emerging, open to a great diversity of ideas and our talents and even to change. The potential to innovate, commercialize, train and create in this area - where science meets art, and utility meets storytelling - is enormous and crosses almost all industries. And my own experience has shown me that writers and artists can, and do, and perhaps even *must* influence technology development.

It remains a thrilling, confusing time. Personally, I've been in and out of the trough of

disillusionment many times over the past two decades, and I'm delighted you're catching me on the upsurge. I used to say in talks that this was an intermediary moment. But I feel we are in a new moment now, with more potential – with new head-mounted displays coming to market, with the capacity to walk inside a game engine and have a conversation with a character who is responsive, courtesy of software like Charisma ai., on the cusp of being able to generate entirely new VR environments on the fly via text prompt, with new horizons, new inspiration and new dangers already here at the new intersections of XR, artificial intelligence and the internet of things.

This is surely one of the coolest areas of inquiry in the world, with implications for human breakthroughs in literature, cinema, gaming and, more: perception and understanding. The field needs Africa and the unique perspectives on literature, cinema, gaming, movement, theatre etc. that will enhance and inform these breakthroughs.

Africans who have had access to XR infrastructure have been incredibly successful – already world-leading - with Joel Kachi Benson from Nigeria, for example, winning the Golden Lion for the Best VR Story at the Venice International Film Festival in 2019 for Nigeria's "Daughters of Chibok", a piece that demonstrates the powerful potential of VR for social impact storytelling. Influential immersive studios like Black Rhino in Kenya and Electric South in South Africa are leading the way in content creation, training and dissemination. "*The Lost Botanist*, a South African VR project, combines African mythology with immersive technology in fresh ways. "Lwanda Magere" by Kenya's Black Rhino VR adapts traditional Luo folklore into VR; "Spirit Robot" by Ghanaian creator Jonathan Dotse, explores Afrofuturism through VR; and "Let This Be a Warning" by The Nest Collective in Kenya, presents an Afrofuturistic narrative questioning colonial perspective. These projects demonstrate how African creators with access already using XR to preserve cultural heritage and share stories with global audiences while pushing technological boundaries."[2] African creators have also excelled at 360 video creation – resulting in international dissemination of important works like *Container*, a brilliant 360 immersive piece that I saw in Montreal this past summer. But this is only a taste of what might be possible with greater access to tools and mentorship.

Figure 15: Kachi Benson's Daughters of Chibook

Figure 16: R/VR Africa Hackathons, and the SwiftXr authoring platform out of Nigeria

[2] I am grateful to one of the anonymous reviewers of this paper who pointed me toward these additional examples. I am quoting the comments here in their entirety.

You can build on the AR/VR Africa Hackathons, and the SwiftXr (Figure 16) authoring platform out of Nigeria. You also have the Microsoft Africa Development Centre, a premier center of Engineering. And events like this one, that put the University of Calabar at the centre of a global conversation. There are workshops, hackathons and online communities probably many of you here are hosting and that I would love to hear more about them.

Ultimately you also have a young, tech-hungry population in Africa versus an aging west. But we stand at a crossroads, I think, between siloed conversations and a truly global dialogue that will usher in new practices. Will our ways of working be smaller and more homogenous – or open and expansive? I feel strongly that a critical mass of diverse experiments is necessary to push XR into maturity.

We are also at a crossroads when it comes to next-generation content where we need to choose between further instrumentalizing our lives – AR as information overload, as shopping experience, as map, for example - or making our lives more magical. I lean toward magic rather than wayfinding devices and am hoping for a diverse ecosystem rather than more homogeneity, an ecosystem that will involve all of you here.

I'm reminded that 'our machines are working on our thoughts' - a caution against the consolidation of our tools and the relentless sameness of the worlds they enable and the gentle constraints on our imaginations – even as we forgive the sameness of off-the-shelf solutions like ChatGPT or Midjourney or Multibrush or Unreal engine on the grounds that the most explosive power of that tool may have more to do with creation than reception.

As a creative writer and poet, my impulse with XR and associated immersive technologies has always been to make the world stranger and hopefully more beautiful or interesting; to whisper secrets in public. While I am very interested in data-driven work (more on that, below) I also want to overlay the world with a poem you can touch and that will change based on engagement. I would encourage African artists and writers to use XR to explore making the world more poetic, rather than more efficient, at least at this stage. XR is a revelatory leap into a new poetics and a doorway to implications of these technologies for what it means to be human. We should take inspiration from the cutting edge of science but we should take inspiration, too, from diverse global histories of earlier arts, experimentation, magic, immersive theatre, oral storytelling traditions… a diversity of experience and expression.

One of my earliest collaborators, Jay Bolter, quite famously said that working in AR was more akin to working in cinema at the turn of the last century, when conventions had not yet been established and illusion and experimentation reigned. And on the really fun days in the lab, it still feels like that. With conventions still unwritten, I urge you to make new, Afro-centric rules, privileging your preferred ways of writing and attending to audience here, in the shadow of all the possibilities and dangers of AI, including for the creation and co-creation of immersive stories, even specifically the ones I have maybe loved best for 20 years… navigable, immersive, vast and responsive XR environments… I feel that early excitement again.

Figure 17: The Amazing Cinemagician exhibit at the Ontario Science Centre

The patron saint of our lab back then was probably early filmmaker George Méliès. And one of my amazing students at that time - now Dr. Helen Papagiannis - headed up a remarkable exhibition at the Ontario Science Center one year called *The Amazing Cinema Magician*, where we shared all of our early prototypes and paid homage to the great pioneer of special effects and new cinematic grammars.

In this, our own pioneering moment, we need to grab all of our tools and all of our people. We need to look beyond the West for content and methods. We also need to look backward in time as we face the future… into early and silent cinema to circus to gaming to streaming to literary theory, into ritual and panoramas, storytelling circles and dancing, epics, and into cognate practices we might need for our new visions… like experiments in sounds from the 1960s … or the 1930s… and expanded installations from all the world Expos… experiments that failed in labs 20 years ago, but might be good now… beautiful stories in languages other than English and French, that currently dominate the field, storytelling structures beyond the western convention of three-acts… and all the criticisms from people who have engaged with this kind of technology – or who dismiss or resist it – resistances we might consider as part of a non-insider wish-list as we dream.

And a robust ecosystem that allows for a diverse range of expression, ways of working and rich explorations of the affordances and limits of various technologies will also enable us to use XR technologies and storytelling techniques to meet the urgent need to tackle grand global challenges.

The next section of my talk consists of provocations along three separate lines:

- Immersive Storytelling as read against new technological development
- Immersive Storytelling and the foundational needs of communities of practice
- Some cool things to think about and some cautionary tales.

I'll speak in broad strokes, with the expectation that you will all be able to bring your specific contests and understanding to the issues.

3.0. THE FUTURE OF XR 1: IN THE CONTEXT OF IOT

Ok – so we've barely got our heads around the practice of combining the digital and the analogue, our machines and our natural world – and we're – BAM - faced with the Internet of Things (IoT), a world in which our networked machines talk to each other as well to us – think Alexa and Google home, but also smart thermostats, lightbulbs - enchanted objects I can now pick up at hardware stores in my hometown- but also everything from health sensors to driverless cars. This convergence of augmented reality and the internet of things constitutes a critical technological breakthrough.

Always-on AR wearables will be distinct nodes in the Internet of Things. This concretization of digital information and the bringing together of networked computational information with the physical–represents an unprecedented unleashing of machine-to-machine communication with massive implications for technological and societal shift and also for making, storytelling and the development of new modes of communication. In Africa, uneven, unreliable and expensive internet access means IoT adoption will be slower… but the capacity to think more deliberately about how/when and why you might want to use IoT as part of your storytelling

toolkit could also be a superpower, thoughtfully leveraging the connected storytelling environment predicated on the Internet of Things to extend immersive and interactive experiences in new ways, including the creation of interactive augmentations, and the refinement of methodologies and best practices for the creation of IOT-enabled experiences.

One research challenge for the creation of immersive narratives will be to determine the ways in which content to support fictional or documentary stories can meaningfully interact with real time sensor-driven data, and to develop workflows and methodologies to support XR as an interface to IOT. Projects might include creating dense, spatialized XR long-form storyworlds dependent on sensor data delivered via a user's wearable devices or even based on traffic or home security data and experienced via next-generation HMDs, allowing a spectator/reader/viewer to wander hands-free though poems and dreamscapes, history lessons or political economy textbooks. Data-driven stories could lead to the creation of new hybrid fictions based in real-world phenomenon.

There is enormous capacity for putting immersive and interactive stories in service of larger issues. In my lab, for example, data-driven XR stories are being leveraged in the service of a number of Digital Humanities projects including tackling public health issues like anti-microbial resistance and vaccine hesitancy, engaging speculative energy futures and climate change and sharing untold stories of the Underground Railroad in Canada.

Another more basic challenge associated with this vision of the future will be to encourage work in cognate fields that will feed into XR-explorations of foundational issues in shooting, editing and interactivity design in immersive storytelling environments, resulting in innovations in panoramic and photospherical design, workflow for XR content creation, and APIs and software for creators(Figure 18s).

Figure 18: Steve Mann-visualizing surveillance culture and IoT through XR

4.0. DATA-DRIVEN STORIES: VISUALIZING SURVEILLANCE TECHNOLOGIES AND THE IOT USING XR

What if we thought about augmented reality as an interface for the internet of things as well as a technology supported by its power? What do we build when XR and IoT come together in ways that allow audiences to understand and inhabit the stories in which we are all already immersed but that are generally invisible to us? This potentially powerful digital practice, one that makes the invisible visible in new ways, is 'phenomenological augmented reality.'

Where I live, computer vision is embedded in toilets, urinals, handwash faucets, doors, lightswitches, thermostats, and many other objects that "watch" us. Camera-based motion sensing streetlights are installed throughout entire cities, making embedded vision ubiquitous. As my collaborator and colleague Dr. Steve Mann observes, "technological advancement is leading to increased sensory and computational performance combined with miniaturization that is making vision sensors less visible. Computer vision is 'seeing' better while it is becoming harder for us to see it."

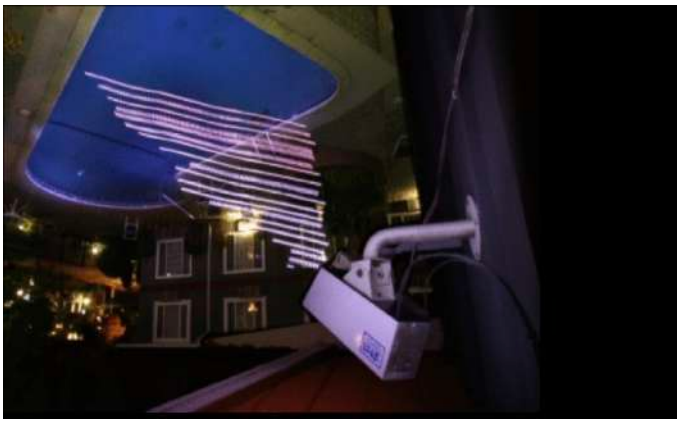

Figure 19: AR Technologies

Figure 20: Mann's pioneering work on the Tactile Sequential Wave Imprinting Machine (T-SWIM)

AR Technologies can be used to make this invisible part of the culture, visible, and tell that kind of story, too (Figure 19). My take on this vision of the future is entirely indebted to Mann who pioneering the field of phenomenological augmented reality in the 1970s and who is endlessly challenging and inspiring. To date the possibilities associated with phenomenological AR have not been fully realized – and have not enjoyed widespread interest - because the viewing situations have been so limited. But this can change.

Being able to see, experience and inhabit veillance fields, wifi clouds and AI datasets represents a new and thrilling epistemological and artistic shift, in addition to proposing a new paradigm for XR – not simply an overlay of digital information, but a mimetic translation that serves as a perfect foil to the enormous imaginative potential of these technologies, the interplay between the real world and the world of our imagination being the foundational condition for artmaking. This is AR on the vanguard of technical possibility that will allow us to see with our naked eyes, as well as with next-generation headsets – new visions and interfaces to our world and its data – deploying XR as both an interpretive lens and concretizing art.

I'm always bugging Steve to work with me to get headsets working alongside MUSE – a commercialized brain sensing technology developed in part in Mann's lab - because I think the results could have fascinating opportunity, for storytelling and beyond, including the development of new artistic genres. We could use AR to capture, represent and communicate the brainwaves of people as they argue and create, for example, paving the way to imagine the creation of digital sculptures of important conversations, last words, poetry…

This vision of the future builds upon and extends Mann's pioneering work on the Tactile Sequential Wave Imprinting Machine (T-SWIM), a naturally augmented tactile reality system for making otherwise intangible electromagnetic radio waves, sound waves, metawaves, etc.(See Figures 20 & 21) graspable. Phenomenological augmented reality also has potential for gaming and theatre.

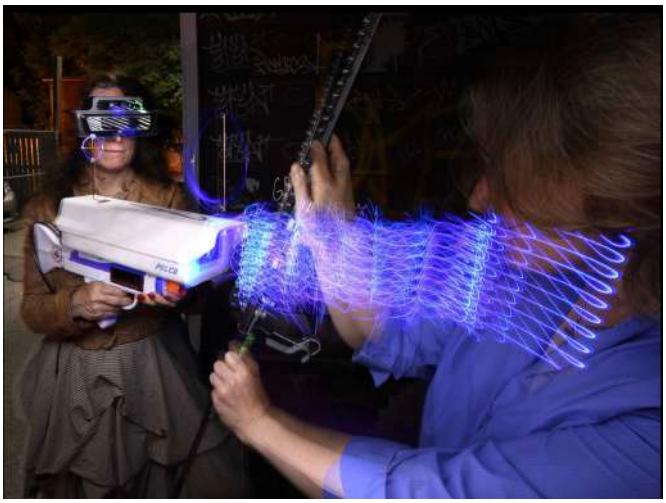

Figure 21: T-Swim Gamming

5.0. THE FUTURE OF IMMERSIVE STORYTELLING 2: IN THE CONTEXT OF AI

Artificial Intelligence and AR are sympathetic technologies that can become more powerful when they work iteratively. AI is the invisible powerhouse behind state-of- the-art machine vision enabling key instances of AR, for example, but AR can be harnessed, in turn, as a powerful expressive tool to animate artificial intelligence.

Almost a decade ago IBM (Figure 22), through a project called Immersive Insights, approached this by giving AR developers a chance to incorporate computer vision and speech recognition AI elements into Unity applications, enabling developers to integrate core Watson services directly into Immersive experiences. It seemed great, but in my experience, Watson was difficult to access and implement. And now, within the current year, users may be able to generate whole landscapes in real time, from within the Unreal engine as they walk through them. Think about that. It's a mind-blowing change for those of us who work in VR. And with new optical see-through HMDs, including the highly-anticipated new apple glasses – it could be a game-changer.

Close your eyes. Think of the environment you want. Imagine words to describe it. Type them into a dialogue box. Or maybe just say them aloud. Or upload a picture that would exist in that environment. Count to ten. Now enter that imagined space. It's one of many things that AI is able to do and that consumer-level tools will soon offer. Other capacities to think about: text to 3d, text to moving image, synthetic characters, AI voices of deceased loved ones. Think of low-hanging fruit first - I had my late father Charles' voice recreated and now the missing two chapters of his last book can be narrated. It's a small technical feat, but one with huge implications. Now think of think of something more ambitious. Maybe synthetic, ai-driven characters and scenarios. What does your imagined space look like? What stories could it support? How you would use these tools?

Figure 22: navigable xr poemscapes – Caitlin's AI+Markov chain + XR work "Tectonic"

One thing I did this summer was to work to incorporate AI into XR environments through a series of prototypes and poetry installations. Some of them were actually poems where the imagery was generated through Midjourney or Dall-e. Others involved using Markov chains to remix existing text, not relying on large language models.

The Markov chains were in part me being in flight from large language models, after having worked

with GPT2 for three unhappy years and what I perceived to be limitations of AI during that period, Notably my own difficulties working for a couple of years with GPT2 and being unable to shift the AI voice in ways that in ways that I wanted to create works that I was interested in or be able to shift syntax. My own experience is that I've been able to do more with AI in the past year than I did in the previous 5 years. My larger point in sharing this here at this gathering is this: even if you haven't been part of the storytelling experiments of the last 20 years, *you can begin exactly in this moment*, without an incredibly steep learning curve and – assuming access… which is a huge assumption I will leave hanging here - you can be successful by bringing in translatable skills rather than having to play catch-up.

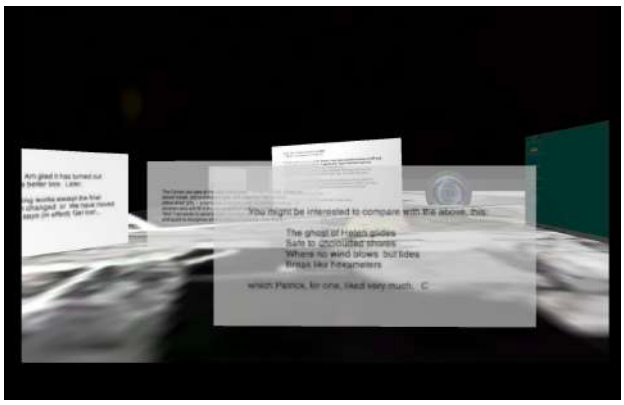

Figure 23: Text poemscapes - This built on some earlier work over the past three or four years using webXR to share navigable poetry and environments

Figure 24: These are little manipulable poetry domes that you can bring to life for yourself. You hide underneath them to hear the poem.

6.0. CO-CREATION + HUMANISTIC INTELLIGENCE

Given all this, this is a moment for immersive storytelling when we desperately need to re-insert human beings into the circuit. My work with Steve Mann informed the development of the Immersive Storytelling Lab, making it a lab foundationally predicated on human intelligence being at the centre of the computing as well as artmaking circuit – a vision in which the computer's primary task is no longer computing, but, rather, becoming an integrated part of its user - something that, to date, has not significantly informed work of labs or artists in the field.

This theoretical orientation is associated with Mann's vision for Humanistic Intelligence (HI) - a framework that puts human beings and the creative act at the centre of technological development, a signal processing framework in which the processing apparatus is inexorably intertwined with the natural capabilities of our

human body and mind. This orientation directly resulted in Mann's founding of the MIT Media Lab's Wearable Computing Project and, consequently, the establishment of the entire field of wearable computing. Mann's HI formulation build upon and re-contextualizes concepts in intelligent signal processing and advocates a future in which signal processing hardware will be built to assist, rather than replace or emulate, human intelligence and creativity. As augmented environments go mobile, viewing devices become increasingly portable, and artificial intelligence interprets our worlds for us based, for better or worse, on who our data reveals us to be, or want, Humanistic Intelligence recentres bodies and communities, empowering human intellect and creativity – rather than simply building more powerful tools. It's a compelling vision for a more sustainable global future and might be an important touchstone for African creators to consider as you build XR worlds in relationship with new AI tools and theorize co-creation with machines.

7.0. SCENES VS TOOLS: THE FUTURE OF XR 3 - CREATING THE CONDITIONS OF CREATIVE POSSIBILITY

If we close our eyes and think about how Super 8 and affordable hand-held cameras and, later, YouTube, the ready architectures of TikTok, revolutionized access to moving image making and distribution we can maybe glimpse what might be possible for a future of XR in which new tools allow us all to be makers rather than audiences.

Software and expressive tools matter a lot, too– maybe especially, in this moment of easy AI creation tools. But now, as earlier, the key to success may really be less about technological innovation and more about creative platforms, laboratories, and artistic scenes in which highly creative content creators can actively engage with the cutting edge. This can be an advantage for Africa.

The hackathons happening here, the incubators, the VRchat spaces, the emerging immersive studios, the nascent course development, the emergence of some global superstars… all of this contributes to a kind of energy that may be your most important asset going forward. Cities with creative ecosystems - cities working, say, to map out their geographies so it's easy to overlay XR content, cities and projects that attract the world to them, like Calabar today - could have a comparative advantage in pioneering the next stages of XR in part because we need a critical mass of ideas/projects/visions/failed projects and beautiful half-visions made by all sorts of people in diverse industries to move us forward… and we haven't had that yet. You are expert knowers already in a field that desperately needs to be diversified both in terms of content and an understanding of how and when and for whom different storytelling structures can be leveraged. To support this you'll need courses not just in computer science of engineering… but in literature departments, cinema, dh courses, poetry workshops…Supportive (think mentorship) and creative (building on made-in Africa stories and forms) and resourced (think access to hardware and software) cultural scenes that will attract a critical mass of talent and energy (think festivals and workshops and startups and university programs) may be the necessary, if not sufficient, for an Afro-centric Future for XR.

8.0. THE FUTURE OF XR 4 ENGAGING ALL THE SENSES

The near future will accommodate a proliferation of XR approaches – networked alongside stand-alone, bleeding edge wearable screens alongside intermediary forms like smart phones, co-creation, author-driven alongside entirely ai-generated, – and for some time to come. African creators can intervene at multiple points in that circuit.

I've been thinking for many years of the miniature - and made many small, affordable

experiments that were rather hilarious in the context of access to a half million-dollar immersive tracking system. But I still think the wonder of some non-interactive, non-immersive, non iot--connected, non-ai or HI supported worlds will persist into the future. And here's one reason why: XR and Immersive storytelling is about philosophical and literary machines as well as technology and, for me, playing with scale in XR – thinking about our human bodies' relationship to small, handheld experiences as well as immersive ones leads me to understand some of its power.

The kind of knowledge produced by the tactile capacities of XR can connect thought to gesture and gesture to action: "Touch here becomes the palliative to the subject- object dichotomy, and the hinge upon which philosophy opens itself to the world'', writes Tschofen (154). Tabletop XR in particular, allows us to hold philosophy in our hands and feel its shape. Immersive works allow us to grasp the structure of the intervention by inhabiting it. For the philosophers in the room, you'll recognize that all this is very Adorno who writes: "Thought-images are...parabolic evocations of something that cannot be said in words. They do not want to stop conceptual thought so much as to shock through their enigmatic form and thereby get thought moving, because thought in its traditional form seems rigid, conventional and outmoded" (322–327). The use of XR as philosophy enabling – as a machine for the creation of thought images - depends less on technological change than understanding the power of what we already have, and resisting the impulse to assume the new is a better cypher than what we hold in our hands. What philosophies might you see concretized in this kind of work? Are there made-in-Africa theories that can help us to understand what is going on and what we might make? African philosophy that might underpin your own work? The global field desperately needs to know.

9.0. THE FUTURE OF XR 5 - THEORIZING HUMAN AUGMENTATION AND AN XR BILL OF RIGHTS

I'll offer, however, a more cautionary note: As we harness the Immersive storytelling power of XR+IoT+AI we do well to remember that the long-term risks of artificially intelligent machines are widely discussed. I was a signatory – along with Mann et al.(web) – to an AR Bill of Rights. The Bill of Rights is a living document framing the potential risks that humanistically intelligent entities pose right now, in different ways across the globe, but soon to impact everyone - whether facilitated by smart buildings, smart cities, cameras in every streetlight, wearable XR technologies or implantable intelligence. Sensory intelligence augmentation technology is already developed enough to be dangerous … as a way to diminish personal privacy and rights, as a way for governments or corporations to use power and surveillance data unjustly. X reality is not just about mediating screens but, rather, already affects all of us ever hour of every day - cities, buildings, cars, and people, are augmented - and we need international conversations to theorizing what is at stake in the futures we imagine and the objects we make and potentially commercialize, thinking about how this technological convergence will affect both adopters, non-adopters and specific communities. These connected technological moments brought together under the umbrella of XR is changing us as already as nations and as people, with implications for privacy, sousveillance, regulation and ethics as well as creation. And we should seize the opportunity to advance a global conversation around these timely and urgent issues. The artistic, technological, archiving and viewing situations we created have social and political consequences. What is at stake? The protection of audiences, artists, adopters, and society from machines of malice as we make magic.

To conclude: I'd like to go back to my early directive to the researchers in my lab – use the point of friction and the obstacles to current success to shape what we hope for the future of immersive stories. Keep the cautions in your back pocket, but think about positive futures, too.

In the future XR will be: spatial, personalized, immersive, connected and multi-sensory. It could be a new canvas for radical new stories – new content, new creators, new forms - with global impact.

Remember how I urged you to think about stories for a decade out and build for tools, situations and audiences that you don't yet have – that may not yet exist? Do that. Really.

I am confident that there are so many stories here in this room – stories you already have in your head right now that should be part of the global conversation.

If you don't have access to a VR headset or a computer capable of running Unity or Unreal… or you live in an area where web-based XR like 8th wall just does not make sense because of connectivity issues, you can still write stories for the near-future. If you don't have a 360 camera, take placeholder shots with your phone, or sketch out what that worlds will look like. Make diaromas. Paintings. Paper prototypes. Use every chance you get to encounter immersive stories. Go online to worlds likeVRchat. Be inspired by the work you love, or by the aspects you love.

Be inspired by the work that leaves you cold and does not speak to you – challenge yourself to build something better. Use everything you don't like about the XR you see as an occasion to ask yourself a question: how could that have been improved? What story would I have done? Was the granularity odd? Was the piece too long? Too short? Too realistic? Not realistic enough? Could you not identify? What it inaccessible? Boring?

If you've had a chance to access hardware and software, do you want hardware to be lighter, faster, with less lag less latency? To want it to be more personalized? do you want tools to be easier? Do you want to be able to make things outside? Want there to be rhizomatic narratives? What bugs you? Think about what you don't have yet think about what you don't like about this work. Think about what you would make if technology if the barriers to entry were lower. Would you want to walk through films set in your city? Do you have a half-forgotten story from your childhood that should be shared? Stories from your community? How might your audience participate? Become part of the story? Could these technologies extend practices and ways of telling stories you already find valuable? Could they retrieve stories that have been lost?

Think about how do we and *when* do we want to co-create with machines? What's the sweet spot between AI and its editing? between equity and its adoption? Insight from Africa will be critical to hear in the global conversation.

Know yourself as a creator with something important to give the field at a pioneering moment. If you are someone with stories to tell who has never had access to VR or AR – maybe that will be your advantage. Because you are free to imagine something truly spectacular without being tethered to current possibility. Do you know that many inventions started as part of a screenplay or science fiction novel? The future, Anne Balsamo reminds us, is created in our imaginations, not in our labs. You might be the holding a key to technology development.

10. CONCLUSION

This is also exactly the time to think about what kind of displays we want. Will we wear them?

Do you want XR contact lenses? Do you need to be able to take a digital narrative underwater with you? Should these experiences scale so that thousands of people can inhabit your work? Is your audience Africa? Is it global? Who are your ideal interlocutors? Who do you care about reaching?

What would mean you'd want to spend as much time in an immersive story as you do on a screen game. Is it just a question of human-computer interaction? Or is it a question of something else? Think of what you might do with the power of the interface being just everyone walking through the world and the potent combination of the real world as your extended digital narrative film set and both the best of your creativity and machine intelligence as the engines for the development of your work. Start there. It's magic.

Take what you don't have yet and use that to imagine future forms to inform the stories of the future. What will meet your needs? What do you want to share with other and with the world?

How do you hope to change the future? A future that can start right now – ready your imaginations and your craft for the time when the next generation of hmds will be in your hands. Or whatever comes after that is in your hands.

I still like thinking 20 years on, to feel at the beginning of something just about to take off. Where now we can maybe fully realize some of the things, we wanted… but are also called to write the next generation of narratives for a new generation. As president of the Electronic Literature Organization, I would like to invite you into our circle – and work with AELF to amplify your contributions.

There is every reason to imagine that immersive technologies – new tools, ways of communicating and new viewing situations could usher in a more Afrocentric future for XR… one founded on new stories, new ways of telling, knowledge you already have changing the conventions of XR constructions, new granularities, leveraging deep roots in participatory storytelling to make foundational interventions in what we understand to be electronic literatures in XR. You have new tools to share your realities more broadly but also to shape the field and help move toward a more Afro-centric Future for XR. Remember, too, that when you intervene in the way stories are told and the shape they take and how stories are disseminated – when you play in the sandbox of the poetics and grammars of emerging technologies – you are fundamentally making art with profound political and epistemological implications. Be part of this moment.

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I am immensely grateful to the anonymous review of this paper who helped me to see a better way to frame this contribution and urged me to pick a more appropriate title. Reviewer comments have strengthened the work throughout. I am grateful to one of the anonymous reviewers of this paper who pointed me toward these additional examples. I am quoting the comments here in their entirety

AUTHOR'S SHORT BIO

Caitlin directs the Immersive Storytelling Lab and is a Professor of Cinema and Media Arts at York University in Toronto. A co-founder of York's Future Cinema Lab and a former Fulbright and Canada Research Chair, Caitlin currently serves as President of the international Electronic Literature Organization. A pioneer of electronic literature, she is the recipient of many international awards for digital storytelling including the 2008 Vinaròs Prize for one of the world's first AR poems, Andromeda, built using software developed in her lab. Recent funded projects include work in 'AI Storytelling', 'Souveillance, Humanistic Intelligence and phenomenological AR for next-generation headsets', "Immersive digital environments and indigenous knowledges: co-creation in virtual reality environments to advance artmaking, digital poetics and reconciliation" all funded through the Social Science and Humanities Research Council of Canada (SSHRC). She recently directed Fiery Sparks of Light, a volumetric XR project featuring iconic Canadian women poets in Partnership with the Griffin Trust For Excellence In Poetry.

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Peer-Reviewed Article

Digital Resistance: Electronic Literature as Counter-Market Practice

Rachid Benharrousse
The American University in Cairo, Egypt.
E-mail: r.benharrousse@gmail.com

Abstract
This study investigates the emergence of electronic literature as a counter-market practice within contemporary digital culture, examining how digital literary works establish resistant practices while operating within neoliberal market structures. The research demonstrates how digital literary innovation establishes new value paradigms that challenge market-driven literary production through critically analyzing electronic literary works. This research advances scholarly understanding of cultural production under digital capitalism by demonstrating how electronic literature establishes creative practices that maintain critical independence while acknowledging their embeddedness within broader economic structures. The paper presents new theoretical possibilities for conceptualizing literary value and political engagement within an increasingly platform-mediated cultural landscape.

Keywords:
electronic literature, digital capitalism, neoliberalism, literary production, digital humanities

Résumé
Cette étude se penche sur l'émergence de la littérature électronique en tant que pratique de contre-marché au sein de la culture numérique contemporaine, en examinant comment les œuvres littéraires numériques établissent des pratiques résistantes tout en opérant au sein des structures de marché néolibérales. La recherche démontre comment l'innovation littéraire numérique établit de nouveaux paradigmes de valeur qui remettent en question la production littéraire axée sur le marché par le biais d'une analyse critique des œuvres littéraires électroniques. Cette recherche fait progresser la compréhension de la production culturelle dans le cadre du capitalisme numérique en démontrant comment la littérature électronique établit des pratiques créatives qui conservent une indépendance critique tout en reconnaissant leur intégration dans des structures économiques plus larges. L'article présente de nouvelles possibilités théoriques pour conceptualiser la valeur littéraire et l'engagement politique dans un paysage culturel de plus en plus médiatisé.

Mots-clés :
Littérature électronique, capitalisme numérique, néolibéralisme, production littéraire, sciences humaines numériques

1.0. INTRODUCTION

1.1.The Crisis of Literary Politics

The contemporary literary landscape is at a critical juncture where traditional literary production and dissemination modes have become deeply entrenched in neoliberal market logic (Nilges 360). The commodification of cultural production has reached such totality that it becomes increasingly difficult to imagine alternatives to market-driven creative expression (Fisher 23). This commodification manifests particularly strongly in the publishing industry, where the evaluation of literary merit has become inextricably linked to market performance metrics, sales algorithms, and platform capitalism's demand for quantifiable success (Spencer 429-30).

The advent of digital technologies, rather than immediately liberating literary production from these constraints, has initially intensified the grip of market forces through "platform capitalism," where digital intermediaries further consolidate control over cultural production and distribution (Srnicek 48). Amazon's dominant position in the book market, for instance, exemplifies how digital platforms can intensify rather than ameliorate the commodification of literature, with its recommendation algorithms and marketing metrics reshaping how literature is consumed and produced. This algorithmic governance of literary value creates new forms of entrenching market logic in creative expression.

The digital realm presents unprecedented opportunities for resistance and reconceptualization of literary production. Electronic literature, operating at the intersection of computational processes and creative expression, emerges as a potential site of resistance to market-driven literary production. Electronic literary works are "creative artworks that interrogate the histories, contexts, and productions of literature, including as well the verbal art of literature proper," while creating new possibilities for expression that exceed traditional market constraints (Hayles 4). The crisis of literary politics manifests as a tension between intensified commodification and potential liberation. Although there has been a boom in publication houses and presses in recent years (Benharrousse 13), this potential for disruption has become particularly significant as traditional publishing structures increasingly fail to address urgent contemporary issues, from climate crisis to social justice, within their market-driven frameworks.

The emergence of politically engaged electronic literature (Bruno Ministro's *Progress in Work*, Vivian Abenshushan's *Permanente obra Negra*, Amira Hanafi's *A Dictionary of Revolution*, etc.) represents a new genre and a fundamental rethinking of literary production's social function. "An aesthetic of difficulty would undermine the very spreadability and commercialization paradigms that help 3rd generation works thrive" (Flores 21). This transformation suggests possibilities for "convergence culture," where participatory digital practices might enable new forms of collective political expression through literary means (Jenkins 2-3). This crisis moment in literary politics thus demands careful examination of how electronic literature might move beyond traditional publishing constraints and late capitalism's new forms of control.

1.2. Electronic Literature as Counter-Market Practice

Electronic literature emerges as a critical force of resistance against neoliberal market structures, offering not merely alternative distribution models but fundamental challenges to how literary value, authorship, and reader engagement are conceived in digital environments. This analysis examines how digital literary works create creative practices that challenge market logic through their formal properties, technical implementation, and modes of distribution. Through close examination of works employing programmatic generation, deliberate degradation, linguistic hybridization, and digital-born modalities, this study demonstrates how electronic literature establishes new paradigms of literary value that actively resist commercial commodification while creating spaces for discursive and critical digital poetics.

The works analyzed here represent more than individual artistic achievements; they collectively

establish electronic literature's counter-market potential, challenging neoliberal assumptions about literary value through their very form and operation. By examining works that employ strategies ranging from algorithmic mutation and programmed decay to linguistic experimentation and resource-intensive processing, this analysis reveals how electronic literature creates new forms of literary engagement that resist traditional market mechanisms while establishing alternative creative production and distribution models.

2.0. NEOLIBERAL CONSTRAINTS IN TRADITIONAL PUBLISHING

2.1. Marketization of Literary Value

The transformation of literary value under neoliberalism marks a fundamental shift in cultural production's evaluation and dissemination. Historically positioned as a cultural institution balancing artistic merit with commercial viability, traditional publishing has increasingly surrendered to pure market logic (Hviid et al. 355-6). This shift reflects the "economic world reversed," where market success becomes the primary arbiter of literary merit (Bourdieu 83). The contemporary publishing landscape demonstrates how this market rationality has evolved beyond Bourdieu's initial analysis, creating new algorithmic governance forms that reshape literary production and consumption.

The implementation of sophisticated marketing analytics has fundamentally altered publishing decision-making processes. Major publishing houses now employ predictive algorithms and market data to select manuscripts and actively shape literary works (Murray 971). This algorithmic governance represents a significant departure from traditional editorial judgment, creating a structure where market metrics increasingly determine creative decisions. This market-driven approach has profound implications for literary form and content. Publishers increasingly demand authors conform to market-tested formulas, leading to books designed for maximum market penetration (Striphas 56-7). This standardization extends beyond genre conventions to influence narrative structure, character development, and even language complexity, creating a form of literary production that prioritizes predictable market performance over artistic innovation or social engagement.

The consolidation of publishing houses under media conglomerates has intensified these market pressures. Corporate ownership has transformed publishing's traditional understanding as a cultural enterprise with modest profit expectations (Schiffrin 104-5). Contemporary publishing conglomerates typically demand profit margins that would have been unthinkable in previous decades, fundamentally altering the industry's relationship to cultural production (Rosen 422). This shift has particularly affected midlist authors and experimental works. Amazon's emergence as a dominant force in book distribution represents perhaps the most significant transformation in contemporary publishing (Rub 370). The company's algorithm-driven recommendation systems and pricing strategies have fundamentally altered both purchasing patterns and publishing decisions. This algorithmic curation creates a discourse where visibility and success increasingly depend on conformity to digital platform metrics rather than traditional literary merit.

The implications for politically engaged literature are particularly significant. Works addressing complex social and political issues often struggle to find support within publishing structures focused on guaranteed market returns. This creates a market-driven political silencing of crucial contemporary issues that receive inadequate literary attention due to their perceived commercial risks. Climate crisis, systemic inequality, and technological critique often find themselves marginalized in favor of more marketable content.

2.2. Authorship under Market Pressures

The reconfiguration of authorship under neoliberal market pressures represents a fundamental shift in creative practice and professional identity. Contemporary authors face an entrepreneurial imperative, where creative production becomes inseparable from self-marketing and brand management (Braun 458-9). This transformation

extends beyond traditional publishing responsibilities to encompass a multifaceted professional identity that demands simultaneous mastery of creative, marketing, and platform-management skills. The emergence of the author-as-brand has fundamentally altered the creative process itself. Authors are increasingly compelled to develop and maintain consistent personal brands across multiple platforms.

This phenomenon manifests in creative decisions prioritizing brand consistency and market viability over artistic experimentation or political engagement. Social media platforms have intensified these pressures; Writers must maintain constant visibility and engagement across multiple platforms, creating a paradigm where the promises of visibility become the means of precarity (Duffy et al. 2). This digital presence requirement generates significant uncompensated labor as authors produce content across platforms to maintain visibility and market relevance.

The economic precarity inherent in contemporary authorship has profound implications for literary production. Authors increasingly modify their work to maintain market viability before external pressures are applied (Larson 4-5). This self-censorship extends beyond content to influence genre selection, stylistic choices, and political perspectives, creating a form of market-driven creative constraint that operates at the level of conception rather than execution. These constraints mainly affect authors addressing political or controversial subjects. The market's preference for "safe" content creates a clear preference for romance (Radway 35), where challenging perspectives face marginalization through market mechanisms rather than explicit suppression.

The cumulative effect of these pressures has generated a neoliberal author paradox, where increased opportunities for publication and audience engagement coexist with diminished creative and political autonomy. Authors are caught between the imperative to maintain market viability and the desire to produce meaningful, challenging work. This tension often results in an attempt to balance artistic integrity with commercial demands through various formal and thematic strategies. These constraints have created a crisis in contemporary literary production, where the very mechanisms designed to distribute literature increasingly limit its expressive and political possibilities (Clair 179-80). Traditional publishing's transformation under neoliberal imperatives has generated what appears to be an irreconcilable tension between market demands and literature's capacity for social critique and artistic innovation.

This crisis also led to new forms of literary production and distribution. The rise of print-on-demand and self-publishing services further exemplifies the intensification of platform capitalism's grip on literary production (Blummer 48). While these services appear to democratize publishing by eliminating traditional gatekeepers, they actually reinforce neoliberal market pressures through algorithmic governance and platform dependency (Petre et al., 4-5). Authors utilizing services like Amazon's Kindle Direct Publishing, IngramSpark, or Lulu find themselves increasingly entangled in platform-specific algorithms and metrics determining visibility and success (Wang and Miller 14). While reducing initial production costs, the print-on-demand model creates new forms of precarity and market pressure. Authors must master writing and marketing and become versed in platform-specific optimization strategies, metadata management, and algorithmic visibility techniques.

The author’s transformation into a platform entrepreneur is particularly evident in how self-published authors must navigate multiple service providers' technical requirements, pricing structures, distribution networks, and invisibility (Myers West 4374). Platform capitalism's influence extends beyond mere distribution mechanisms. Self-publishing platforms' algorithmic recommendation systems and visibility metrics actively shape creative decisions. The promise of democratized publishing through these platforms masks a deeper entrenchment in market logic, where success depends on literary merit and mastering platform-specific mechanisms of

visibility and engagement. This creates a new form of digital precarity where authors must constantly adapt to changing platform requirements while competing in an increasingly saturated market. The result is a paradoxical form of creative constraint where increased access to publishing tools coexists with intensified market pressure and platform dependency.

2.3. Comparing Traditional and Digital Publishing Models

The commodification of literature manifests distinctly in traditional publishing and electronic literature despite operating within capitalist frameworks. Traditional publishing employs what Thompson terms the "value chain" model, where literary works gain market value through controlled production stages, artificial scarcity, and standardized distribution (Thompson 15). This system relies on unit sales, established marketing metrics, and conventional copyright protection to maintain economic viability. The limitations of traditional publishing are even more pronounced when considering that an author may have limited control over the entire publishing process, from editing to promotion, resulting in diminished creative autonomy and a smaller share of generated revenue. Hence, an author with no previously published works is more prone to be published than a published author with “average” numbers further to protect the possibility of a higher generated revenue.

In contrast, electronic literature establishes value not derived from controlled access to content but from the work's processual and experiential qualities (Hayles 103). This fundamental shift in value creation manifests through several distinct characteristics. Electronic literary works often embrace infinite reproducibility, challenging traditional scarcity-based models while establishing value through engagement and interaction rather than ownership. Third-generation electronic literature (Flores 1-4) mainly resists traditional commodification by emphasizing process over product. This resistance operates even as works depend on digital platforms and infrastructure maintained by corporate entities.

The process of signification in itself is resisting commodification since signifiers and signified are continuously being defined. For instance, Talan Memmott’s *Lexia to Perplexia* “insists on the co-originary status of subjectivity and electronic technologies. Instead of technologies being created by humans, this work imagines digital technology present from the beginning, with subjects and technologies producing each other through recursive loops” (Hayles 49). Hence, the reader, author, text, and medium are entangled in the process of signification and continuously being reshaped rather than fixed within a commodified product waiting to be bought. However, both systems ultimately operate within platform capitalism, where digital infrastructure mediates cultural production (Srnicek 48). Thus, the dialectic between traditional publishing and electronic literature reflects a broader tension inherent in capitalist cultural production.

2.4. Resistance Within Platform Capitalism

Electronic literature's relationship with platform capitalism represents a unique form of immanent critique, where resistance emerges from within the systems it challenges. Platform capitalism operates through digital infrastructures that extract value from user interactions and content creation, fundamentally reshaping cultural production through algorithmic governance and data commodification (Srnicek 48). Rather than attempting to escape these structures entirely, electronic literature employs approaches that simultaneously depend on and subvert platform logic.

This paradoxical position manifests most clearly in how electronic literary works utilize platform infrastructure while deliberately disrupting its value-extraction mechanisms. Platforms typically operate through commodification processes that transform user engagement into quantifiable metrics. Electronic literature responds by creating works that generate meaning through processes that resist easy quantification or commodification while operating within platform environments. For

instance, most electronic literature deliberately destabilizes user interaction metrics, creating experiences that platform analytics cannot effectively capture or monetize, where the digital medium's unstable and emergent nature resists platform capitalism's reductive logic.

Electronic literature's deployment of tactical media represents a sophisticated form of protocological resistance that works within and against platform capitalism's infrastructures. “Tactical media as those phenomena that are able to exploit flaws in protocological and proprietary command and control, not to destroy technology, but to sculpt protocol and make it better suited to people’s real desires” (Galloway 176). This manifests in electronic literary works deliberately manipulating platform protocols to create instances where creative practice reveals and repurposes technological control mechanisms. For example, Tisselli's "Degenerative" deliberately corrupts its code through user interaction, exploiting platform protocols while revealing their inherent instabilities. Electronic literature establishes technological constraints into creative opportunities by operating within platform protocols while deliberately exploiting their limitations.

This internal resistance mainly manifests in electronic literature's data generation and collection approach. While platform capitalism operates through the extraction and commodification of user data, electronic literary works often generate meaningful experiences while actively resisting data commodification. This creates resistance that operates not through rejection but through utilizing platform capabilities while revealing and challenging their underlying economic mechanisms.

3.0. TOWARDS COUNTER-MARKET LITERATURE

Electronic literature emerges as a critical site of resistance against market-driven literary production, offering both formal innovations and alternative distribution models that challenge the neoliberal commodification of creative work. Loss Pequeño Glazier's *White-Faced Bromeliads on 20 Hectares* (1999) represents a fundamental challenge to literary commodification through its programmatic generation of perpetually mutating poetry. The work's JavaScript algorithm creates unique textual combinations with each viewing, effectively rendering the concept of a "definitive version" impossible. Consider this passage from the work:

> in the morning, early, through the coffee fields
> the bromeliads float white-faced in the morning air
>
> These lines, when processed through Glazier's algorithm, might transform into:
>
> through the morning fields, early, coffee
> white-faced in the bromeliads float morning air

This perpetual recombination does more than simply generate variations; it actively resists what we might term "textual fixity" - the cornerstone of traditional publishing's ability to commodify literature. The work's resistance to stabilization creates a perpetual literary becoming, where the text exists as a process rather than a product. This fundamentally challenges the market's need for stable, reproducible commodities. Glazier's work operates on multiple levels of resistance. First, its technical implementation makes traditional copyright protection practically meaningless. Second, its distribution through open web platforms bypasses conventional publishing gatekeepers. Finally, its aesthetic experience requires active engagement with its generative nature, forcing readers to confront the constructed nature of literary stability.

Through a more explicit political critique of digital capitalism through its systematic manipulation of user interaction, Serge Bouchardon and Vincent Volckaert's *Loss of Grasp* (2010) presents a new dimension for counter-market practices. The work begins with apparent user control over the narrative but progressively deteriorates into experiences of

manipulation and powerlessness. Consider this pivotal moment:

[User attempts to type a love letter]
System: "I love the way you smile."
[User's text transforms into]
System: "I can't stand your face anymore"

This forced transformation of user input creates an algorithmic betrayal, revealing how digital systems can override user intention. Bouchardon's work thus functions as a metacritique of digital capitalism's promise of user empowerment, exposing the gap between promised and actual user agency in digital systems. The work's formal structure mirrors its thematic concerns. As user control diminishes, the interface becomes increasingly unstable, text becomes harder to read, and interactions produce unexpected results. This technical implementation creates an experiential critique where the user's frustration with the interface becomes inseparable from the work's political message about technological control.

Moving from manipulation towards Mez Breeze's *cross.ova.ing][4rm.blog.2.log][* (2006), we are met with a profound intervention in digital literary practice through its innovative "mezangelle" language system. Consider this representative passage:

> [blog_append][4rm.past.2.present][
> n.sert]s][tray.texting][in2 dis_course

This hybrid construction simultaneously operates as poetry, programming code, and linguistic experimentation, creating what we might term "resistant textuality." The work's deliberate violation of natural language conventions and programming syntax creates texts that resist computational processing and commercial platforming. This resistance operates at multiple levels: syntactical, semantic, and systemic.

The significance of Breeze's linguistic innovation extends beyond mere formal experimentation. Mezangelle establishes textual environments outside traditional publishing economies and digital content systems by creating text that confounds human and machine reading protocols. Language itself becomes subject to market optimization through search engine algorithms and content management systems.

Beyond textual environments, J.R. Carpenter's *The Gathering Cloud* (2016) advances electronic literature's critical potential through its sophisticated engagement with digital infrastructure's material consequences. The work deliberately employs resource-intensive processes to make visible digital culture's typically hidden environmental costs. Consider how the work generates increasingly complex visual elements that burden network resources:

Each refresh draws more data
Through submarine cables
Across server farms
Converting electricity into heat
Heat into bills
Bills into environmental debt

Carpenter's work transforms technical burdens into aesthetic and political critique. Creating intentionally inefficient code forces readers to confront their complicity in digital infrastructure's environmental impact. The work's resource consumption becomes inseparable from its meaning.

The manipulation of time, an impossibility in print, is evident in Young-Hae Chang Heavy Industries' *Dakota* (2002). It presents perhaps the most radical challenge to commercial digital platforms through its deliberate embrace of technological obsolescence and aggressive temporal aesthetics. The work's high-speed text presentation cannot possibly absorb all content in real-time:

BECAUSE I DON'T KNOW WHAT ELSE TO DO
BECAUSE I'M WAITING
BECAUSE I'M WAITING
BECAUSE I'M WAITING

This temporal manipulation serves multiple critical functions. First, it actively resists the "user-

friendly" interfaces that characterize commercial digital platforms. Second, its use of obsolete technology (Flash) represents a deliberate rejection of platform capitalism's demand for constant technological upgrading.

Through actual decay that directly opposes the linearity and demand for maintenance in print literature, Eugenio Tisselli's *degenerative* (2005) presents a radical challenge to digital and platform capitalism's logic of perpetual upgrade and improvement through its implementation of programmed textual decay. The work begins with a coherent text that deteriorates with each viewing as characters are systematically replaced with American Standard Code for Information Interchange (ASCII) symbols and coding elements. Consider this transformation sequence:

Initial text:
"The morning light filters through the window"
After multiple readings:
"Th3 m0rn!ng l!ght f!lt#rs thr*ugh th& w!nd*w"
Eventually degrading to:
"T#3 m%rn!ng l!g#t f!l|#rs t#r*gh t#& w!nd&w"

This systematic deterioration creates a negative accumulation, where increased engagement with the work leads to its gradual destruction. The significance of this approach extends beyond mere formal experimentation. Tisselli challenges fundamental assumptions about digital textuality and value creation by creating text that actively resists preservation and reproduction. If value is accumulated in print through the linearity and progress of the story through pages, *degenerative* becomes an immanent critique and a counter-market practice. The work's degradation process operates as both technical implementation and theoretical critique. Each reading triggers an algorithmic process that randomly selects characters for replacement. This process reverses the traditional relationship between use and value - instead of becoming more valuable through circulation (as in traditional publishing), the work deliberately diminishes itself through reader engagement.

These works represent the counter-market potentiality of electronic literature and resist commodification not just thematically but through their very form and distribution. Their significance extends beyond individual artistic achievement to suggest alternative models for literary production in a digital age. These works create value through their uniqueness and resistance to replication, shifting away from the traditional publishing model that relies on scarcity. They effectively circumvent conventional market dynamics by being primarily available online and often at no cost, opening the door to innovative forms of literary engagement that prioritize accessibility and inclusivity. This transformation invites a diverse array of voices and perspectives that were previously marginalized or overlooked in more traditional formats. These works challenge conventional notions of authorial control by introducing models of creative production that embrace indeterminacy and collaborative meaning-making, allowing readers to participate in the creation of meaning rather than simply consuming content. These works cultivate a participatory critique by necessitating active participation in their generative or interactive elements, where reading transcends mere enjoyment and becomes deeply intertwined with political awareness. This engagement encourages readers to reflect critically on social, economic, and political issues, thereby reshaping their understanding of literature as an economic product within platform capitalism and market dynamics. Yet, electronic literature is a dynamic, participatory practice that has the potential to resist these market forces and inspire social change and a more informed and engaged community. In essence, these transformative texts redefine the relationship between authors, readers, platforms, and the literary landscape itself.

4.0. CONCLUSION

This investigation into electronic literature's relationship with neoliberal market structures reveals a complex dialectic between digital resistance and market incorporation. The paper demonstrates how electronic literature simultaneously operates within and against

platform capitalism's infrastructure, establishing digital spaces that enable new literary and political expression forms. This study has revealed how electronic literature's formal innovations serve as aesthetic achievements and political interventions by carefully examining works employing programmatic generation, deliberate degradation, and temporal manipulation. Investigating neoliberal constraints in traditional publishing has exposed increasingly restrictive market mechanisms that fundamentally reshape creative expression and political engagement. These constraints manifest as external pressures and internalized imperatives that transform authorship itself, converting writers into entrepreneurial subjects required to navigate an increasingly algorithmic marketplace. This transformation presents particular challenges for works that attempt to address contemporary political crises or experiment with literary form outside market-tested parameters.

Electronic literature emerges as a critical site of resistance to these market pressures, though this resistance remains necessarily partial and contested. The works analyzed demonstrate sophisticated strategies for challenging market logic, from Glazier's perpetually mutating poetry that resists textual fixity to Tisselli's degenerative texts that subvert digital capitalism's logic of accumulation. However, this resistant potential must be understood within its material and economic constraints. The increasing consolidation of digital infrastructure, the sophistication of surveillance capitalism's tracking mechanisms, and the persistent precarity of cultural workers all present significant challenges to electronic literature's critical project. These constraints suggest that while electronic literature cannot entirely escape market forces, it can create significant spaces for resistance and experimentation within platform capitalism's architecture.

The implications of this study extend beyond electronic literature to broader questions about cultural production under digital and platform capitalism. This analysis suggests new possibilities for understanding the relationship between artistic autonomy and economic constraints in digital environments by examining how creative works can establish resistant practices while operating within market structures. These insights become particularly relevant as traditional cultural institutions increasingly migrate to digital platforms, raising crucial questions about the future of creative expression in an algorithmically mediated culture.

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AUTHOR'S SHORT BIO

Rachid Benharrousse is a Research Fellow at the School of Global Affairs and Public Policy at the American University in Cairo. He has a Ph.D. in Migration and Political Studies from Mohammed V University in Rabat. His international experience includes roles such as Don Lavoie Fellow at the Mercatus Center, George Mason University, and Research Director at Palah Light Lab, The New School. Benharrousse has also held positions as a Research Fellow at the African Academy for Migration Research (AAMR), University of Witwatersrand, and as a researcher at the Berkman Klein Center for Internet & Society, Harvard University & Digital Asia Hub. Benharrousse's early career was marked by his role as an Early Career Researcher with the Association of Middle Eastern Women's Studies (AMEWS) and as a Graduate Researcher at the Paris Institute for Critical Thinking.

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Peer-Reviewed Article

Exploring the history of digital poetry from 1950 to Augmented Reality Poetry

Christopher T. Funkhouser
New Jersey Institute of Technology.
E-mail : funkhous@njit.edu

Abstract
This article offers a comprehensive overview of digital poetry, tracing its development from the late 1950s through to contemporary augmented reality applications. It begins by highlighting early stochastic texts generated by Theo Lutz, contextualizing them within the mathematical aesthetics championed by Max Bense. Funkhouser explores how digital poetry evolved into multi-modal formats, integrating text, visuals, and sound to create both kinetic and static works. Notably, the lecture examines key influences from non-digital movements like Dada and Concrete Poetry, and discusses the impact of hypertext, gaming culture, and networked writing on digital poetics. The presentation emphasizes that digital poetry invites imaginative reader participation and challenges conventional poetic forms, exemplified by works such as Jason Nelson's interactive poetry games and Ranjit Bhatnagar's Pentametron. Funkhouser concludes by reflecting on how digital tools have redefined poetic practices, offering new modes of expression and collaboration in a networked era
Keywords: Digital Poetry, Augmented Reality, Electronic Literature, Poetry

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Résumé
Cet article propose un aperçu complet de la poésie numérique, retraçant son développement depuis la fin des années 1950 jusqu'aux applications contemporaines de réalité augmentée. Il commence par mettre en lumière les premiers textes stochastiques générés par Theo Lutz, les replaçant dans le contexte de l'esthétique mathématique défendue par Max Bense. Funkhouser explore l'évolution de la poésie numérique vers des formats multimodaux, intégrant texte, visuels et son pour créer des œuvres à la fois cinétiques et statiques. L'article examine notamment les influences clés de mouvements non numériques tels que le Dadaïsme et la Poésie Concrète, et discute de l'impact de l'hypertexte, de la culture du jeu vidéo et de l'écriture en réseau sur la poésie numérique. La présentation souligne que la poésie numérique invite à une participation imaginative du lecteur et remet en question les formes poétiques conventionnelles, illustrée par des œuvres telles que les jeux de poésie interactifs de Jason Nelson et le Pentametron de Ranjit Bhatnagar. Funkhouser conclut en réfléchissant à la manière dont les outils numériques ont redéfini les pratiques poétiques, offrant de nouveaux modes d'expression et de collaboration dans une ère connectée.

Mots-clés : Poésie numérique, Réalité augmentée, Littérature électronique, Poésie

1.0. INTRODUCTION

From its roots to the present, in this talk I introduce and explore digital poetry—a genre (or formulation) of literary, visual, and sonic artistry unknowingly launched by poets who began to experiment with computers in the late 1950s.[i] My first book on the subject, *Prehistoric Digital Poetry: An Archaeology of Forms, 1959-1995*, offers a detailed history of its foundation, and I will introduce the overarching parameters of the genre from this touchstone.

Before saying anything else about the topic, I wish to share a quote from an unlikely source, Nathaniel Philbrick's book *Why Read Moby-Dick?* In a chapter titled "Poetry", Philbrick writes, "Good poetry is not all about lush and gorgeous words. It's about creating an emblematic and surprising scene that opens up new worlds" (73). He was writing about Herman Melville's prose, but I believe the sentiment also pertains to digital poetry. Digital poetry, beyond revealing to us truths about the materiality and possibilities of language, has expanded to encompass virtual worlds, such as Second Life and Minecraft, where we begin to visualize imaginary words, bodies, and presentations of language. Additionally, senses of surprise offered up in many examples of digital poetry, both in form and content—not knowing what formations of language the program is going to issue next—should be recognized and celebrated as one of the genre's great attributes. Lastly, a relationship with print and electronic does exist. I would be remiss not to point out that digital poetry unquestionably has roots in unconventional non-electronic writing, such as Stéfane Mallarmé's "Un **coup** de dés jamais n'abolira le hasard", Permutation, Concrete, Visual, and Process Poetry, and, in certain examples, Dada.

Impersonal—yet objective—communication dominates many works of digital poetry. While not always clear in presentation or coherent, it is a capacious and inviting endeavor genre of art that accommodates a wide range of approaches and predilections. The unexpected dynamics seen in digital poetry, with its unconventional combination of modalities, is capable of quickly transforming its audience's mindset, as poetry and literature have done since its condition as an oral form. Today we use a mouse and keyboard to jar our senses rather than turning a page. Here's a chart outlining the historical technical and aesthetic circumstances of the genre itself. Let's take a moment to review it, since this typology pertains to what occurs in digital poetry.

2.0. TEXT GENERATORS, VISUAL AND KINETIC POETRY

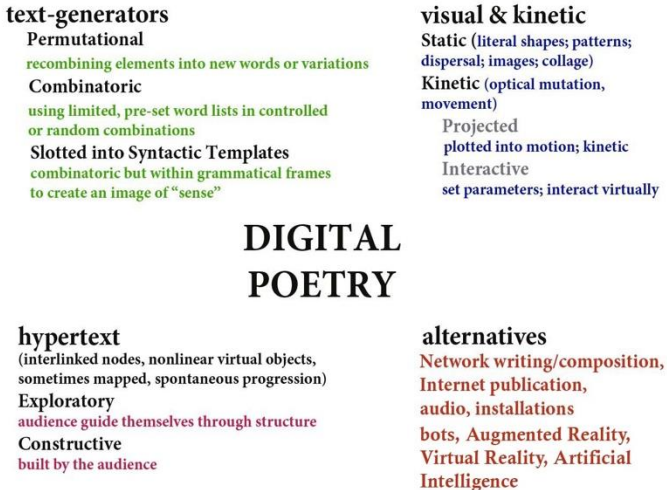

Figure 1: Chart outlining the historical technical and aesthetic circumstances of Digital Poetry Genres

Text generators were initiated in 1959,[ii] Visual and Kinetic works began appearing in the mid-1960s,[iii] Hypertext in the mid-1980s),[iv] and numerous alternative formulations have appeared since the late 1990.[v]

The point I make in *Prehistoric Digital Poetry* is that the groundwork for *most* of the genre was established before the WWW existed; works produced subsequently are hybrids, often falling into these lineages in multiple ways. Digital poetry has grown to become not a singular "form," but rather a conglomeration of forms that now constitutes a genre containing heterogeneous components. Computer programs that write sonnets or haiku, videopoems, interactive sound poems, hypertexts, and so on, despite their stylistic differences, all qualify as digital poetry—which

evolved across decades and invites writers to explore a variety of computerized techniques.
I will present a few examples, even some of my own digital poems—as an introduction to engaged practices. Audiences who engage with these projects most often encounter medial changes in language and language-based communication through computers and digital networks: creative, experimental, playful and also critical language art involving programming, multimedia, animation, interactivity, and communication is on display. My second book on the subject, *New Directions in Digital Poetry*, includes a series of 24 case studies at its core, bookended by contextual chapters that explain how the advent of the Web marks the moment at which the distinct areas of digital poetry begin to merge together as hybrid systems of communication that mine expressive possibilities held by computers and networks.

To classify the works in this talk I'll borrow a simple qualification scheme discussed in *New Directions in Digital Poetry*. In a talk presented at the International Festival of E-Poetry in 2009, Slovenian scholar Janez Strehovec introduced the concept of an "elevator pitch poetics", in which the delivery of poetic material takes no longer than an elevator ride—an idea that makes certain sense when we consider the audience for poems on the network include people consuming the work on mobile devices or in fragments as opposed to sitting with a work with time for deep attention or concentration.

Of course, not every digital poem conveniently fits in to the elevator pitch scheme, including one brilliant work that was delivered quickly but takes time to read and fully absorb, Ranjit Bhatnagar's *Pentametron*. *Pentametron* is a web app that uses the network to construct sonnets in iambic pentameter. Specifically, it uses an algorithm that arranges rhyming couplets drawn from Twitter posts. This is a perfect moment to reflect on what digital poetry isn't. Many of you are probably familiar with traditional sonnets, such as Shakespeare's most famous, Sonnet 18, which begins,

Shall I compare thee to a summer's day?
Thou art more lovely and more temperate…

It will be immediately clear to anyone using *Pentametron* that the digital poems it creates are a distant cry from those by the heroes of English literature. Because the source is Twitter, naturally the language is far less refined (if not outright crude).

3.0. DIGITAL POETRY

Digital Poetry, in this and many instances, is awkward, borrowing and expanding from convention, yet making utter sense in today's uber-texted world. Devices like this can compile lines without regard to overall, linear meaning, but are compiled by a computer program that reads words phonetically and arranges them into songs of a new sort. It's a lyrical toy recognizes and respects the forms, and then uses technology of the networks to use its sensibilities in a very contemporary way. One here does not expect eloquence, and often encounters verse of a new sort—a type of classical poetry composed from a cross-section of cultural discourse.

Let's explore some other examples of "elevator pitch" poems.

Here are three pieces from Dan Waber's *Strings*, which originally appeared on the *Electronic Literature Collection*, Vol. 1. In works such as "argument", we as readers are presented with information and become involved with the imaginative construction of meaning based on the author's presentation of a single, moving line. The author presents a series of brief, fluid animations that provide practically instant gratification, illustration, and point for a skimming reader, who quickly absorbs the author's projection and assign their own meaning. These works, despite being simple and direct, can contain straightforward or variable meaning. The postmodern sensibility of making it the reader's responsibility to determine meaning is certainly on display in this work, as it is in many digital poems.

Jody Zellen's *Spine Sonnet* employs Dadaist methods. Zellen created two versions of the piece, one for the Web, and one as an iPhone app; at present only the app is functioning, and the work is documented on the Web. The website randomly juxtaposes the spines of 14 books from Zellen's library each time the page is refreshed to create, coincidentally, a sonnet (albeit one very different from Shakespeare or even *Pentametron*). Like many contemporary works of art, this work engineers a re-assembly of information into poetry. The app version is strictly textual; it uses an arrangement of fonts and colors but not images—which perhaps gives it a more poem-like appearance. Other i-apps are more instrumental, or language play-things, like Jörg Piringer's *abcdefghijklmnopqrstuvwxyz*, which enables the user to create an experimental sound and visual poem.

Digital poetry is not an advertisement. Our primary response to any title should be to think about the content and experience; works are not presented to inspire audiences to buy something. Jhave Johnston is a Canadian poet and videographer. Among his plentiful works, many of which accessible on the Web via glia.ca, is a series titled *Muds* (2009), "palpitating word poems" in which he joins graphical objects with text (and, alternatively, makes text into objects) using software. Let's look at one called "Truth". The vigorous (often linear) spectacle Dr. Johnston immediately, viscerally creates plasticity with his tools here and in works such "unity Axioms" (from the *Softies* series), are uniquely powerful. Language, fluid and elastic, is given another layer with which to play, mean, and affect. Digital poetry's often fluid states prevent us from considering works as being plastic. Yet because they never harden, works of digital poetry always maintain *plasticity* in presentation on the WWW. They exist in a state of being moulded, receiving shape, made to assume many forms–often seeking qualities that depict space and form so as to appear multi-dimensionally. Another of Johnston's Web applications, *Zero Whack*, devises imaginary books, with titles and blurbs, at the user's command.

Although many densely prepared examples exist, desire for spectacle and brevity in digital poems is evident. In either instance, the 'writer' provides landscape for the reader–the writer must stimulate on the surface, and beneath and beyond it. Thus, refreshing language and appearance of a work at a reasonable pace help authors keep an audience's attention. Given the attention span and sometimes temporal constraints of the average WWW or mobile device user, artists often benefit from making works that do not fluster, and can be read in small chunks. Further, authors may gain advantage by taking into account that much of the potential audience may absorb content on smaller screens, such as mobile phones. Content layered for profundity, depth or viewer transformation on the desktop may not effectively translate to a mobile device. Given this scenario, an applied 'elevator pitch' poetic approach makes much sense. With so little time to deliver perceptive content, the value of immediate insight, imagistic impression (verbal and/or visual) and reflection cannot be understated. Grand musings, elegant descriptions, deep development over time and variable metaphorical exposures may, for certain users, be reliquaries from literatures and poetries past.

In digital poetry, we often confront speculative and hyper-attentive spectacles, spectacles of words and their mediated cohorts (images, sounds, links) looking to correspond with past and future senses of writing. One of the things we also see in some of these examples is the author connecting their work with book or print culture—although doing so is certainly not the concern of all practitioners.

Now we'll take a few minutes to look, at least briefly, at pieces that do require more time to explore and process. Tactics and techniques of surprise and seduction over both short and long periods can purposefully construct and scale digital poetry to marvellous heights. A balance of immediate and prolonged stimulation may be presented simultaneously. Opposing a straightforward approach, many works unquestionably engage oblique strategies, and as digital poems layer and expand, adding poetic depth, they may especially appeal to someone

whose sensibilities have been trained to appreciate discursion.

Rather than associate with print culture, Jason Nelson has at points situated his work within gaming culture. Digital poetry games, however, are not reminiscent of those found on xBox. Nelson is a provocative practitioner, who has made interactive cube poems, as games, and, most recently, as a mysterious textual exchange conducted via google docs on the network. One of many interactive works I have admired is "I made this, you play this, we are enemies", which proposes a type of conflict between writer and reader, but in the end becomes, in my view, a vehicle for creativity. Nelson's work is often about making, and this particular case is an example of how a writer can, in her or his own hand, provocatively build on structures presented in the culture-at-large.

Digital poetry is not Pixar, Hollywood, or even Sundance (at least yet), though cinematic works are being created, some featuring audio tracks and some featuring subtitles.[vi] As filmic as they are, they usually ask us to read, and sometimes to be willing and able to receive the content in non-linear sequences. Non-linear styles require considerably more attention on the type of the reader, and as a result is able to present something more complicated in its layering of sophisticated materials.

Before concluding, I will focus on some collaborative works by Stephanie Strickland. First, a slightly older collaboration Strickland did with Paul Ryan and Cynthia Larson Jaramillo titled *slippingglimpse*. In the work, Strickland splices together Ryan's videos of seaside water movement and text, superimposed and arranged on the screen according to the video's water surface patterns. Textual content here reflects ephemeral natural movement. The author writes on water, and asks the viewer to hold it–physically—a double impossibility, yet on a literal scale, one that a digital illusion upholds. We register the text that appears onscreen in slow motion to grasp the poem's intentions, a possibility well within a viewer's range given the work's design. In this title, processes of viewing are not especially demanding; we can see how Strickland recycles words, ideas, and verbal arrangements with others, and, how permutation and mediation that treat language elicit recombinant energy and extend the initial statements or concepts. Another piece, a collaboration with Nick Montfort, *Sea and Spar Between* is, write its authors, "a poetry generator which defines a space of language populated by a number of stanzas comparable to the number of fish in the sea, around 225 trillion". The words in the poem originate in Emily Dickinson's poetry and from *Moby-Dick*. This work looks and performs completely differently than what we've seen as it shapes its endless poem. The poems, as readers will find on display in every screen of the work, are completely readable fusions of the Dickinson and Melville's works, which can be appreciated on literary and aesthetic registers. This "mash-up" style, as always, creates unexpected output, and reflects the hybrid traits of digital poetry in general.

Full-fledged introductions to digital writing are presented in the four Electronic Literature Collections, produced by the Electronic Literature Organization. Available online, the editors of these anthologies identify more than fifty general categories of electronic literature and digital poetry, based on style of work, software and programming used, or other demographic markers. These anthologies contain fundamental types of works, and also innovations such as "geolocative" works, as in J.R. Carpenter's "Entre-Ville" (ELC Vol. 2), which uses Google Maps to propel the narrative, and documentation of Augmented Reality (or AR) works, such as Caitlin Fisher's *Andromeda*. These two forms in particular—works making use of GPS, or mapping of some sort, or combine hardware, software, place, or combine virtual and physical objects—are capably delivered via mobile phone. Another extremely interesting example of AR poems, which relied on QR codes rather than GPS, are Amaranth Borsuk and Brad Bouse's *From Page to Screen*, which was created with Flash (and thus is not available at present). Fortunately, the work has been at least partly documented; here is a demonstration of the book prepared by Scott Rettberg. AR, along with Artificial Intelligence, are

among the latest exciting developments in the field. Expressive devices perpetuate and expand, at times complicating the act of reading, but in the end holding a payoff for those who are open to receiving poetic language delivered through new modalities and devices. Performance artist Judd Morrissey has also made extremely compelling AR works.

My research on AI poetry is still in progress, so for now I will say only that there are a number of online apps that anyone can experiment with, such as PoetryGeneratorAI, Poem of Quotes AI Poetry Generator, Verse by Verse, Bored Humans AI Poetry Generator, Paraphrasing Tool Poem Generator, and Poem Portraits. If you wish to read some good AI poetry, I would highly recommend taking a look at Jhave's *ReRites*, a project in which he spent a year training neural nets to write poems, and then extensively edited the output he created. From my perspective, thus far human intervention on AI output brings the best results.

Considering the overall trajectory of digital poetry, we clearly see demonstrated the flexibility of computerized poetry, in which careful arrangements of elements and negotiations between factors (sometimes randomized) become the forces that determine its qualities. Many examples come into existence somewhere between chaos and order, deconstructing human language to find new meanings. Literary and cultural routines are subverted by the computers, software, and programming that provide viewers with interpretable content.

In examples presented above, and throughout the field as a whole, we see authors who are not confined to perform in a singular manner. The many compositional possibilities indeed encourage variety. Language is not rejected by digital poetry, though words become one of several possible types of meaningful transmission to its audience. Sometimes this combination of peripatetic modalities, variety, discrepant contents and surprise can produce unsettling effects in this period where we acclimate to unfamiliar forms of expression. Contemporary readers should not be fearful of embracing something new, or looking at possibilities for literature from all angles, and should enjoy the process. Plasticity and difficult consequences brought on by digital poetry and the superabundance of possibilities inherent in the genre need not lead to frustration. Poetical celebration with exuberance, excess and surprise, conducted through media dynamics, has the capability to enthrall once the organic functionality of the work is identified and understood.

As I was beginning my research on, and practice of, digital poetry—after a decade or more of dedicating my life to poetry—one of my big influences and inspirations was an issue of the journal *Visible Language* focusing on "New Media Poetry". In it, I came across a quote in Ernesto Melo e Castro's essay "Videopoetry,"

> Poetry is always on the limit of things. On the limit of what can be said, of what can be written, of what can be seen, even of what can be thought, felt, and understood. To be on the limit means often for the poet to be beyond the frontier of what we are prepared to accept as being possible. (140)

This perspective gave me a certain type of foundation, impetus, and permission to proceed in the field of digital poetry.[vii] I have done so in several ways, often using anagrams, textual processing, and "sampling" to create output. Much of it I see as falling into a post-Fluxus lineage, and I can also safely say that the production of these literary works contains quite a bit of mathematical effort.

I made quite a few Animated flash poems, or "text-movies". The first ones were homages to my daughters. I also made one for Yoko Ono (see "Hidden Messages"). After the 2008 election, the Associated Press commissioned me to create digital poems for the occasion of Barack Obama's ascendency to the Presidency; *Babushka Macaronies* is one of three3 I prepared.

I have worked on numerous other projects, many of which you can access via my homepage or other locations. Some were made using Flash, including much longer animated works, and some of my most progressive creative research as a digital poet exists

only onstage, where MIDI software allows me to control visual and textual media as I play guitar. Some of my experiments are documented on my YouTube page (http://www.youtube.com/ctfunkhouser).

For me, computers and digital systems and networks have altered the disciplinary sense of what poetry can be, and intimate what literary dynamics may contain in the future (if not how it will be presented to readers). I am now learning, through Waliya about research and practice in African Electronic Literature via the Multilingual African Electronic Literature Database & African Diasporic Electronic Literature Database, which are a very exciting development (Waliya 55-64). I look forward to learning through it.

4.0 CONCLUSION

The purpose of this lecture has been to illustrate several of the primary historical approaches and models in the realm of digital poetry. In the examples introduced above, and on apparent across the Internet, there is an historical consistency displayed, whereby digital poets use language as a conduit, sometimes contained on multiple registers. Digital poets labor to experiment and invent not out of cultural necessity or desperation; works have sprung from self-driven exploration of media and the individual desire to craft language with technology that, in turn, modulates and modifies traditional approaches to writing. The computer presents both a puzzle and formidable sounding board for poetic ideas and animated articulations.

Digital poets use computer science and technology to explore or expand literary reality. Amid these productions, mediated application of ideas aims to stimulate audiences. Factors contributing to the success of works include effective use of time: striking a balance between making viewers familiar–yet not necessarily comfortable – with the process while leading them along in a manner that allows for tension and contemplation. Infusing projects with familiar unfamiliarity and discrepancies offer the benefits of surprise, impart a lack of predictability, and perpetually perform for the audience. Digital poetry grows and expands, not in a unified direction but pluralistically. Computer processes, still relatively new to the world and artists engaging with them, adorn poetic features unavailable to previous generations of literary artists. Writers and artists create with computers in ways that do not simply document the poetic forms of bygone eras: they are reinventing the possibilities for poetry. The authorial ability to shock by media, stun by visual beauty, avoid boredom in and through language, cannot be underestimated.

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AUTHOR'S SHORT BIO

Dr. Christopher Funkhouser is a writer, musician, and multimedia artist. He is author of two scholarly monographs, Prehistoric Digital Poetry: An Archeology of Forms, 1959-1995 and New Directions in Digital Poetry. Funkhouser has taught in the Communication and Media Program at New Jersey Institute of Technology since 1997, and was a Visiting Fulbright Scholar at Multimedia University, Malaysia, in 2006. A publisher who worked closely with Amiri Baraka and Kamau Brathwaite, Funkhouser was commissioned by the Associated Press to prepare digital poems for the occasion of Barack Obama's inauguration in 2009, and in 2016 he performed at the Whitney Museum's Open Plan: Cecil Taylor exhibition. He is a Contributing Editor at PennSound, hosts the POET RAY'D YO radio program at WGXC (Hudson, NY), and is a member of the improvisational musical ensemble Most Serene Congress.

[i] The pursuit of composing poetry by using computer operations began in 1959 when Theo Lutz made "stochastic" (i.e., random variation) poems written on a program-controlled ZUSE Z 22 computer. At the time, he was a student of Max Bense, who suggested using a random number generator to accidentally determine texts. Examples of this work, which applies tools of mathematics and calculation (i.e., logical structures) to process language, along with descriptions of its attributes, were published in a 1959 article ("Stochastic Text") in Bense's journal *Augenblick*. An animated version of the program, made by Nick Montfort, is available via https://nickm.com/memslam/stochastic_texts.html .

[ii] Text generators usually rapidly produce many poems, using a programmatic formula that selects words from a database to create output. Computers cannot be programmed to engineer a "perfect" poem; some poets use the computer to alter or subvert typical forms of expression, others seek to be imitative. Either way, selecting appropriate input text is the most important element in the process of pronouncing meaningful expression. Whoever establishes the database co-authors the poem with the writer of the program; the user of the program also has authorial prerogatives in selecting from and editing output. This type of computer poem challenges and invites the reader to participate imaginatively in the construction of the text; some mock the conventions of poetry, others reify them. From a general point of view, the majority of combinatoric and permutation works produced feature variations, extensions, or technological implementations of Dadaist technique. Many aleatoric poems contain few parameters and also share sensibilities common to open-form poetry. Of course, and somewhat ironically, the poems are not pure chance occurrences—they are preconfigured to be randomized, and some examples contain fixed attributes, as in slotted works, where the author strives to imbue rigid syntax or comply with established parameters. Digital poetry made with text-generating programs gradually developed into a multi-faceted form of its own, exploring many styles of literary expression.

[iii] By the mid-1960s, graphical and kinetic components emerged, rendering shaped language as poems on screens and as printouts. Since then, videographic and other types of kinetic poems have been produced using digital tools and techniques. This advancement—foregrounding the visual aspects of language at least as much as the verbal—marks several changes in the development of digital poetry. In contrast to computer poems introduced above, these visual and kinetic works largely

employ mutation as opposed to permutation. Static and kinetic visual works introduce a poetry of sight, overtly conscious of its look, sited on and incited by computers; standard typefaces became a thing of the past. Digital poets began to work with prosody that was literally in motion. The earliest works by Marc Adrian (1968) and Carl Fernbach-Flarsheim (1970) were, like text-generated poems, automatically spawned by viewers encountering a program in an installation setting. With the development of graphics software, subsequent works embodied visual methods that approximated concrete and visual poems, non-interactively rendered and fixed on the page. The computer became a convenient tool to manipulate the appearance and presentation of text. Some titles closely follow earlier manifestations of visual poetry; others (like the videographic and hypermedia productions) venture further afield and do not aim to simply reconfigure the style of poems that are read and understood exclusively through alphabetic language. By the 1980s, poets increasingly presented moving language on screens as a result of the development of PCs. Kinetic poems long predate a style of digital poetic practice that erupted with the emergence of the WWW, typified by works such as Stefans's "The Dreamlife of Letters", and elsewhere. Groundwork for animated digital poems (such as those made with Macromedia Flash) was in fact underway by the mid-70s, in coded works such as Arthur Layzer's textured animated poetry (written in FORTRAN) that featured words "streaking" down the page. Digitally rendered poems portray at least three different traits: words are arranged into literal shapes; words show patterns that represent dispersal or displacement of language; or, words are combined with images (as in a collage). In static poems words that do not move are placed on the screen. In kinetic works, optical mutation of words and letters is the operative principle; poems, by design, move and change before the viewer's eyes. Poems that inscribe kinetic language can be divided into two general categories: projected and interactive. Projected works set poetry in motion in two distinct ways. Words are plotted into motion (or letters themselves change shape or morph in appearance), or are presented as part of kinetic collages in which elements of language are combined with visual objects or symbols in single or multiple visual scenes/scenarios. In the few interactive works that are kinetic and do not involve overt hypertextual operations, viewers are invited to set some of the poem's parameters (used in the activation or appearance of words), or interact with a virtual object that is fixed in position on the screen. In kinetic works, poets find dozens of ways to portray poetic text as shifting, vibrant verse. Palimpsest is used powerfully; images can be a mélange of fragments of words complimented or replaced by imagistic forms. These poems show that many different expressive elements can be plotted at once, or in a short period of time, layered on top of one another. Putting phrases in motion as sliding, spinning objects, and otherwise synthesizing words, lines, and symbols are the techniques established as typical of all visual works. The inclination to display poetic work in such ways developed alongside the technology capable of accomplishing the task, which has only increased with the technical developments in the WWW era, where even games have been developed.

[iv] In the 1980s, hypertext (non-linear texts that are intrinsically, mechanically interconnected) developed in sync with the increasing availability of the personal computer. Theorist Michael Joyce classifies presentational modes used by authors into two distinct categories: "constructive" and "exploratory" (*Of Two Minds* 41). These models are useful towards establishing the broadest codification of hypertextual poetry. Thus far, nearly all works are explorative, and various forms emerge within this vein of production which pertain to the media inscribed and methods of navigation. As defined by Joyce, exploratory hypertexts allow their audience to guide themselves through a text as interest, engagement, and curiosity dictate, and reflect the author's sense of structure. This mode, according to Joyce, ideally allows the audience the ability "to create, change, and recover particular encounters with the body of knowledge, maintaining these encounters as versions of the material, i.e. trails, paths, webs, notebooks, etc." (41). A reader explores a body of work that has been set before them on the computer. Constructive hypertexts, on the other hand, are steadily built by

their audience, as part of a process of transforming the knowledge previously presented; Joyce has described dynamics of such texts as "versions of what they are becoming, a structure for what does not yet exist" and "serial thought" (179, 189). Programmers developed tools that facilitated such non-linear writing, enabling authors to create links within and between texts while simultaneously incorporating visual, kinetic, sonic, and static verbal texts. In these works, a number of different files (comprised of various media) are programmed into arrangement with each other, presenting poems in segments through a series of links, or may be otherwise conceived, as Jay David Bolter observes in *Writing Space: Computers, Hypertext, and the Remediation of Print*, as "visual objects with which the reader interacts" (156). Once hyper- works were developed, all the principal possibilities of contemporary digital poetry were available—the genre has proliferated in the past twenty years by synthesizing and cultivating each of its modes. We can identify distinct characteristics in every digital poem, but the accumulation of styles confounds any single critical definition of artistic works which merge poetry with digital technology. Essentially, four types of hypertext works were designed: 1.) those which feature only text presented as a series of nodes which are directly interlinked (sometimes with some sort of "map" that can be used as guidance); 2.) those that feature significant graphical and kinetic components (i.e. hypermedia), also based on the 1:1 link-node premise; 3.) those that present a virtual object that the user negotiates (without having to constantly "click" on links to traverse that text); and 4.) those that are formed through methods of aleatoric progression.

[v] Internet publications, network writing initiatives, digital projects conducted in physical space (including holographically presented poems), and audio poetry have been produced since the 1980s. In these manifestations of digital poetry, the expressive issues do not include whether or not the computer can write poetry, or graphically enhance it, but how various types of machinery can be used to accentuate and modify poetic process and range. The collaborative composition of online texts, as practiced by groups, in MOOs and elsewhere, extends previous forms of written collaboration into a virtual environment. Atypical modes of design and quick delivery are characteristics of these publications. In the network era, computers are also being used as a mechanism to circulate contemporary and historical productions. Digital sound tools and processes alter the way voices are constructed, heard, and combined. In so many ways, computer technology has been used in conjunction with poetry, as writers invent new practices, and re-invent old ones with digital media.

[vi] Works that are entirely cinematic, featuring soundtracks favoring the poetic over ordinary narrative, have been explored by Roderick Coover and Scott Rettberg and others.

[vii] For Melo e Castro, Videopoetry and digital poetry both emphasize, "the importance of phonetic values in oral poetry, of scriptural values in written poetry, of visual values in visual poetry and of technological values with computer use and video for the production of poetry, and not only for simple repetitive and non-creative tasks" (141). Another quote that informed my thinking and excited me considerably appeared in André Vallias' essay "We Have Not Understood Descartes," which encapsulates the essence of digital poetry as literature in a broad sense and offers insight into its most potent characteristics: "Interactivity allows a work to be modified according to internal criteria (those defined in the programming language) and also according to the repertoire and interests of the reader; it opens up a field of unlimited dimensions for poetic research, and provokes an irreversible subversion of the traditional relationship between author, work, and reader. (157)

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Emerging Global Trends and the Teaching of Literature

Faith Samuel Bassey

Deena Larsen

[1] School of Languages, Department of French, Akwa Ibom State College of Education Afaha Nsit, Nigeria. E-mail: faithworld40@Gmail.Com
[2] Washington State University Vancouver, Washington State, USA
E-mail : deena.larsen@wsu.edu

Abstract

Teaching in all sectors is evolving from traditional methods to embrace technology's multi-faceted reach and potential to expand knowledge and make learning more effective and efficient. As technology advances, so too, does the professional world and consequently education grow and transform. The education sector now can work with a plethora of emerging, innovative teaching techniques, thus creating a more dynamic and impactful learning environments, effective and efficient acquisition of knowledge and skills for the achievement of specific goals. Technology-based learning techniques boast tools to help students address academic challenges. Literature can now also embrace technology through electronic literature (interactive fiction, digital storytelling, narrative games, etc.), which uses games, images, videos, sounds, links, navigations and other digital qualities as an essential part of the reading experience. There are specific tools that could be used in Nigeria, such as writing for cell phones or using an Internet in a Box for schools or communities that may have a computer, but lack internet access. This paper examines the emerging technological trends to better inform local teaching in Nigeria and to most effectively use available technological resources.

Keywords: *Teaching, teaching techniques, technology-based learning, literature, electronic literature.*

Résumé

L'enseignement dans tous les secteurs évolue, passant des méthodes traditionnelles à l'intégration des possibilités multiples de la technologie, qui permet d'élargir le savoir et de rendre l'apprentissage plus efficace et efficient. À mesure que la technologie progresse, le monde professionnel, et par conséquent l'éducation, se développent et se transforment. Le secteur de l'éducation peut désormais exploiter une multitude de techniques pédagogiques innovantes et émergentes, créant ainsi des environnements d'apprentissage plus dynamiques et percutants, et facilitant une acquisition efficace et efficiente des connaissances et des compétences pour atteindre des objectifs précis. Les techniques d'apprentissage basées sur la technologie offrent des outils qui aident les étudiants à relever les défis académiques. La littérature peut également intégrer la technologie grâce à la littérature électronique (fiction interactive, narration numérique, jeux narratifs, etc.), qui utilise des jeux, des images, des vidéos, des sons, des liens, des navigations et d'autres caractéristiques numériques comme parties essentielles de l'expérience de lecture. Il existe des outils spécifiques qui pourraient être utilisés au Nigeria, tels que l'écriture pour téléphones portables ou l'utilisation d'un "Internet in a Box" pour les écoles ou les communautés qui

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disposent d'un ordinateur, mais pas d'accès à Internet. Cet article examine les tendances technologiques émergentes afin de mieux informer l'enseignement local au Nigeria et d'utiliser au mieux les ressources technologiques disponibles.

***Mots-clés** : Enseignement, techniques pédagogiques, apprentissage basé sur la technologie, littérature, littérature électronique.*

1.0. INTRODUCTION

Education is the bedrock of every society. It is the empowering force in the world. Education creates knowledge, builds confidence, and breaks down barriers. It aims at promoting growth and developing an individual's personality. The process or act of imparting knowledge or skills to another is termed teaching.

Teaching is a complex and multifaceted profession that involves facilitating learning, cultivating critical thinking skills, and nurturing intellectual curiosity. It is a dynamic and evolving profession that requires a deep understanding of the principles of effective instruction, a commitment to student engagement, and willingness to impart knowledge to others.

Several education exponents have defined and appropriated the concept of teaching, each according to their own demeanour. For Dewey teaching is the ability to assist learners in organizing, directing, and maximizing the stream of developing life experiences (89). According to Ayeni "teaching can be defined as a systematic process of transmitting knowledge, attitudes, and skills in accordance with professional principles (144). In the views of Smith in Isola (5), teaching is a system of actions involving an agent, an end in view and a situation including two sets of factors those over which the agent has no control (class size, characteristics of pupils, physical facilities, etc.) and those which he can modify (such as techniques and strategies of teaching). Based on Smith's definition of teaching, the underlying factor that enhances the achievement of comprehensive educational objectives is an effective teaching technique such that would help the learner to develop cognitive thinking and increase the psychomotor skills of learning. In the words of Begum "learners understanding, critical thinking, practical skills and interest are four key factors of good teaching techniques" (1). Teaching techniques refers to the methods and strategies used by teachers to deliver knowledge and facilitate learning. It involves the selection and implementation of various educational means and activities to achieve specific goals.

Teaching techniques can also be defined as an integrated organisation that includes a set of materials, devices, tools, and educational attitudes that the teacher uses to clarify an idea or to change a vague concept to improve the educational process. The choice of teaching techniques can have a significant impact on student learning outcomes. Hightower qtd. in Isa, Mammam, Badar, & Bala (2) opined that those questions about effectiveness of teaching techniques on students learning have consistently raised considerable interest in the thematic fields of educational research. According to Isa, et al (2), student-centred methods or techniques are more effective than more traditional teacher-centred techniques. In teacher-centred methods, such as the "lecture method" common in tertiary institutions where class sizes are very large and students do not have their own computers or other technology, students are passive and learning tends to be superficial.

However, Ndirangu qtd. in Isa, et al (1) argues that different factors influence the choice of teaching techniques such as subject matter and student population, the teacher's learning objectives, availability of teaching and learning resources and

the ability and willingness of the teacher to improvise if conventional teaching aids are not available. We would add availability of technology to Ndirangu's list of factors influencing teaching methods. Ndirangu drew his inference from the fact that different teaching techniques serve different purposes for example: lecture-based techniques may be suitable for delivering content-heavy material, while inquiry-based techniques may be more effective for promoting critical thinking and problem-solving skills. Similarly, hands-on activities and project-based learning can provide students with opportunities to apply their knowledge and skills in authentic contexts, fostering deeper understanding and retention of information.

2.0. METHODOLOGICAL FRAME WORK

The emergence of new global trends has necessitated new teaching methodologies that incorporate digital tools and interdisciplinary approaches to better understand and engage with this evolving field. Hence, this work will adopt a comparative analysis method which will examine these trends by contrasting traditional and contemporary approaches to the teaching of literature, considering both global influences and local educational contexts.

3.0. OBJECTIVES OF THE STUDY

This study aims at:

3.1. Identifying innovative teaching strategies such as project-based learning, interdisciplinary approaches, and students centered method, that reflect emerging educational trends.

3.2. Examining how social media platforms and online literature communities contribute to the way literature is discussed, taught and shared across borders.

3.3. Assessing the role of digital technologies in the teaching of literature, as well as provide guidance on the teaching of electronic literature in an environment with no Internet access through a medium called " Internet in a box", or "Paper exercise".

4.0. TECHNOLOGY-BASED TEACHING TECHNIQUES

In this era of increasing use of computers and the internet in education applications, students and teachers have no choice than to embrace the technology-based teaching technique. Technology has become an integral part of education, offering innovative tools and platforms to enhance teaching and learning experiences. Costly notes "that technology makes learners to be more engaged in the learning process and also provides meaningful learning experience" (2). From interactive whiteboards to virtual reality simulations, educators have a plethora of technological resources at their disposal. However, the effective integration of technology into teaching requires careful planning and implementation.

Top on our list is the **Flipped Classroom Model.** This reverses the traditional approach to teaching by delivering instructional content outside of class time; typically, through online videos or readings and using class time for activities, discussions, and hands-on learning experiences. Carsten et al explain that "flipped classroom approach is being used by most teachers, and students are able to study their notes at home and engage proactively in discussions, activities and exercises occurring in school" (3), this technique empowers active engagement and fosters deeper understanding of subject matter. This model depends on providing students with access to pre-recorded lectures, interactive tutorials, and supplementary materials. While some of this can be replicated if students have paper textbooks, video recordings, interactive literature that depends on elements like sound, navigation, images, etc. cannot be delivered on paper. Thus, students must have access to the technology, either via a cell phone or a computer.

4.1. **Gamification** involves incorporating elements of game design and mechanics into educational activities to enhance motivation, engagement, and learning outcomes. Research shows that gamification creates dopamine in one's brain, thus making learning more pleasurable and enjoyable, as well as rewarding. By using points, reward, and leaderboards students become more

engaged with the lesson and more likely to want to participate in the future. With gamification, teachers become coaches who offer detailed introductions to real-world applications of the subject matter. Moreover, students are encouraged to use their imaginations to solve problems or complete tasks.

4.2. Participatory, Interactive, and Experiential (PIE) textual engagement. Games are not the only venue for learning. Technological advances in cell phone apps as well as computers and software have created environments where students can participate in creating and reading works that require interactivity (for example, choosing what actions to take in a story, adding their own input into a comment or into the story itself, getting immediate feedback on answers, interacting with other people as well as artificial intelligence through chats).

4.3. Collaborative learning platforms such as Google classroom, Microsoft Teams, and Moodle enable educators to create virtual learning environments where students can collaborate on projects, share resources and engage in discussions. These platforms facilitate communication, collaboration and knowledge sharing among students promoting a sense of community and collective learning. Colleges in the United States use programs like Canvas or Slack where students can access lectures, turn in assignments, work with other students in groups on assignments, track their grades, etc.

5.0. THE EVOLUTION OF LITERATURE FROM ORAL TRADITION TO THE DIGITAL AGE

Literature, the written or spoken expression of human creativity, has evolved significantly throughout history, transitioning from oral tradition to written text and finally to these technologically advanced formats. This evolution reflects not only changes in technology but also shifts in human communication, culture, cognition, and expectations of engagement with texts.

Before the advent of written language, human societies relied on oral tradition to pass down knowledge, history, and cultural values from one generation to another. Oral storytelling was not only a means of entertainment but also served as a virtual tool for education and preservation of collective memory. Story telling emerged as the human mind evolved to apply causal reasoning and structure events into a narrative and language, allowing early humans to share information with one another. Storytelling engagement expects storytellers to be a "teacher" and thus "lecture" in a more traditional teacher-centred manner. Audiences are expected to behave as traditional students would: to listen passively, memorize, and recite back.

Oral literature can be described as "verbal art; art that is delivered orally and transmitted orally from person to person, generation to generation, religion to religion; etc., by word of mouth. Forms of oral literature are epic poems, folk tales, folk songs, myths, legends, ballads of people and events, fables. Most of folk tales eventually moved from oral tradition to written form. Most of them begin with expressions like once upon a time" (Vaidya, 7). Many of the earliest works of oral literature were codified exactly as it was recited, and later, the codification process began to involve comparing various versions of related works into one canonical version. Many works still continue to be orally transmitted even after the codification process.

Enock enumerates the characteristics of oral literature as follows: it is flexible that is, it changes due to time, area, and manner of performance. An artist can change the story depending on the audience who watches or listens to the story. Oral literature involves face-to-face contact between the artist, the storyteller, and the audience. He goes on to say that oral literature is stored in the minds of the artists. It is not stored in books, tapes or pamphlets as written literature which is stored in books and pamphlets. Oral literature is owned by the society (6-7).

The invention of writing around 3500BC in Mesopotamia marked the emergence of written literature. Written literature is the form of human expression through writing. Writing allowed humans to record their thoughts, experiences and narratives in a tangible and enduring form. This

transition from oral to written literature led to the development of written epics, novels, essays, poems, stories, religious texts, and philosophical treaties, shaping the cultural and intellectual landscape of ancient civilizations such as Egypt, Greece, and Rome.

The invention of the printing press by Johannes Gutenberg in the 15th century revolutionized the production and dissemination of literature. Prior to the printing press, books were painstakingly copied by hand, making them rare and expensive commodities accessible only to the elite. With the advent of movable type printing, books became more affordable and widely available, democratizing access to knowledge and fostering the spread of literacy and ideas across Europe and eventually the world.

Written words, however, still retain the storyteller/artist/author to audience/reader relationships and expectations. These are teacher-centred in that readers are expected to passively follow the author's narrative form from beginning to end as a book proceeds from page 1 to the concluding page. Readers are not expected to comment on, skip pages, or interact with the words—although reader practices and marginalia histories suggest that readers do want to participate more fully with these works and have done so informally for centuries. See for example, Acheson (2019) discussion of marginalia in private copies of early English works as well as the popularity of choose your own adventure books, where readers flip to various pages, depending on their choice of actions within the adventure.

6.0. EMERGENCE OF ELECTRONIC LITERATURE

Electronic literature can now take advantage of computer and cell phone technology to create a student-focused, Participatory, Interactive, and Experiential (PIE) experience. This participatory and interactive method allows readers to engage with the materials in ways not possible within a book. These techniques can now take rhetorical devices well beyond the scope of a written page. The digital age has revolutionised the way literature is created, consumed, and disseminated (Shah and Khaskheli, 1).

The advent of electronic literature could be traced back to the early experiments with computers and digital technology in the mid-20th century. Early experiments with electronic literature can be found in hypertext fiction, a form of nonlinear storytelling that allows readers to navigate through interconnected nodes of texts, images and hyperlinks. Other forms of electronic literature are interactive fiction, inspired by text-based adventure games which allow readers to make choices and interact with the narrative through branching storylines. Kinetic poetry, such as Faith by Robert Kendall or At Nightfall. A Goldfish by Melody Mou Peijing, combines text, animation, and sound to create visually stunning and immersive poetic experiences.

As technology continues to evolve, electronic literature has emerged as a dynamic and evolving genre that challenges traditional notions of storytelling and narrative structure. In this digital age, storytelling takes on new dimensions by incorporating multimedia elements to enhance the narrative experience (Bolter, 10; Manovich, 8).

By harnessing the power of digital technology, electronic literature has expanded the possibilities of storytelling allowing for new modes of expression and engagement. Manovich explains that the digital age democratizes access to literature, overcoming geographical barriers and bringing literary treasures to every corner of the world. Furthermore, electronic literature has sparks interdisciplinary collaborations between writers, artists, programmers and designers, leading to innovative and experimental works that push boundaries of artistic expressions.

Electronic literature allows for new forms of expression. Links from one word to another take on new emphasis and meaning as they connect ideas (for example, a link can show causation, opposition, related concepts). Images can be used to show progression within a story, relationships between ideas, etc. Sounds set the mood and can add more

layers of meaning. Animations show ways to move within texts and images. For example, the ending screen of Rob Kendall's Faith has the poem's words crumbling to the bottom of the screen in an unreadable heap, and the word "Faith" tumbling down on top of everything. Games allow students to interact more fully with concepts and create even more connections and ideas.

7.0. THE WATER SELLER (MAI RUWA)

The electronic literature work "Water Seller" (Mai Ruwa) by Faith Bassey and Deena Larsen published in the New River Online Journal. (https://thenewriver.us./) (2023) is an example of how Nigerian writers could develop works and reach out in student-centred pedagogical approaches to grapple with questions plaguing transitions from traditional to modern worlds. The work is accessed strictly online and through technological means either a cell phone or any other electronic gadget by clicking on the links. Readers on a laptop computer can click on the image to get the story, and readers on a cell phone can click on links that provide nodes for the story (for example, The water she carries, The questions she asks, and The body she cherishes). Within these nodes are portions of the main image as well as links to other nodes within the story. Thus, readers are not constrained to a beginning, middle, and ending reading but can participate in an interactive experience.

The story is about Aiwa, a woman who lives in Nigeria with her son. Aiwa has a propensity for learning about medicine, and education in general, due to her mother getting Aiwa vaccinated in secrecy. When she meets her husband, Mbanu, the son of the king, he does not discourage or dislike her efforts to learn and read, even though their society does not favour or encourage women being educated. Aiwa is disliked by his family because she comes from a poor family, but she is finally able to marry Mbanu because she saves a different son of the king from choking. Aiwa starts spreading her knowledge to the people in the King's circle; he hates how knowledgeable she is and how she is spreading her teachings that go against their cultural beliefs and traditions. The King eventually poisons his son. Upon his death, it is tradition that Aiwa must drink Mbanu's dead body water or leave the town. She leaves with her son and starts a new life as a water seller. She also begins to learn more and strives to become a doctor, which brings the story full circle.

This work emphasizes how important water is for life sustenance and how water is often taken for granted, as most privileges are. This work was also made to highlight the global discrimination that women receive around the world just on the basis of gender and ideological traditions.

Readers will engage with this work because it details this harrowing and dramatic story that is usually outside the scope and themes of common readings. The story provides a fictional but presumably realistic story of what life is like in Nigeria and the importance of water accessibility. The work helps readers within the culture grapple with changing traditions. Moreover, it provides a picture of life in Nigeria that can help other nations understand a bit more about Nigerian culture.

The writing process showcases new way to engage students as they could write their own works in a similar manner. If students have access to a computer, they can write these types of works in Twine, a free software that explains nodes and links. If not, they can partner with American writers and students and collaborate in similar ventures.

8.0. ACCESS ISSUES AND POTENTIAL SOLUTIONS

A typical Nigerian classroom is restricted to using a chalk board or a white board, and computers are scarce to non-existent within the classroom. This is in stark contrast to many classrooms in the United States, where computers are at every desk and often students bring their own laptops and cell phones. Moreover, internet access may be lacking or unstable in many parts of Africa, in contrast to the nearly ubiquitous presences of strong connections in the United States. Therefore, ingenuity may be required to access these new student-centred,

participatory ways of reading and writing that electronic literature affords.

8.1. Cell phones may provide a way to use these technology-based, student-centred approaches. Electronic literature works available on cell phones could be listed and distributed, along with suggested syllabi and course questions for teachers and students to appreciate and engage in these works.

8.2. Internet in a Box. If a classroom can boast a single computer but no internet, teachers may use an Internet in a Box, a low-cost digital library, consisting of a wireless access point with storage, which users nearby can connect to. These storage devices could be equipped with some of the works of electronic literature (such as the over 3,000 works that have been archived and curated by The NEXT online museum, library, and preservation space.

8.3. Paper exercises. If none of these are available, students can still be encouraged to create their own works using paper. In this exercise, each student writes a paragraph on a given theme (for example, tomorrow, food, a particular festival). Students then read each other's papers and lay the papers out on the ground (held down by rocks). Then students take grasses or threads to show connections from one paper to the next. For example, the word "yellow" in one paper could link to the word "sunrise" in another paper. Students can then read or perform the text by reading one paper (node) and following a link to the next paper. This engages the students in writing and developing connections as well as participatory navigational reading.

9.0. CONCLUSION

Technology-based, student-centred teaching techniques offer endless possibilities for innovation and improvement in education. As educators embrace these best teaching techniques, they can empower students to become lifelong learners equipped with the knowledge, skills and competencies needed to succeed in a rapidly changing world.

The evolution of literature from oral tradition to written text to electronic formats also reflects the dynamic interplay between technology, culture, and human creativity. While each stage of this evolution has its own unique characteristics and challenges, the essence of literature, its ability to inspire, educate and entertain, remains constant. As we navigate the event changing landscape of digital literature, it is essential to uphold the values of literacy, diversity and free expression that have been the hallmarks of literary traditions throughout history. Embracing electronic literature in our classrooms can inspire our students to create and connect ideas and fully participate in today's modern society.

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AUTHORS' SHORT BIOS

Faith Samuel Bassey is a dedicated lecturer in the department of French at Akwa Ibom State College of Education, Afaha Nsit, with a B.A and M.A in French Studies. Currently pursuing a Ph.D in graphic literature at the University of Uyo. Mrs Bassey 's research explores the intersection of visual story telling and literary theory, with a particular focus on the use of graphic novels on illness and health discourse, as well as cultural representation. She also has passion for immersive storytelling and electronic literature. Passionate about fostering an engaging learning environment, Faith Bassey encourages students to explore the evolving relationship between text and image. Apart from teaching, she is an active participant in academic conferences and has contributed to various publications in the fields of French studies and visual culture.

Deena Larsen is resident artist at Washington State University, Vancouver, USA. She stands out as a pioneer in electronic literature, celebrated for her groundbreaking contributions to hypertext fiction and poetry. Her acclaimed works, such as *Marble Springs* (1993) and *Disappearing Rain* (2000), illustrate her talent for merging storytelling with interactive, digital formats. Beyond her creative endeavors, Larsen has been a driving force in the field, organizing events like the Cybermountain Colloquium and hosting online forums for the Electronic Literature Organization between 2000 and 2005. Larsen's creations delve into nonlinear narratives and reader participation, highlighting the transformative power of digital media. For instance, *Marble Springs* invites users to navigate a network of poetic stories woven into a hypertextual landscape, while *Disappearing Rain* employs Japanese kanji-inspired visual and linguistic components to craft a deeply layered, immersive experience. Her work bridges artistic innovation with scholarly insight, fostering exploration into the potential of hypermedia as a storytelling medium. For further details about Larsen's contributions, platforms like the Electronic Literature Directory and Alchetron provide comprehensive overviews.

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Migration and Literature: A Comparative Study of Chimamanda Ngozi Adichie and Ben Okri in Digital Humanities

Henry Chukwudi John

Abayomi Olusola Awelewa

[1]Universitat Oberta de Catalunya, Barcelona, Spain.[1]African Leadership University, Kigali Rwanda

E-mail: henrykwazema@gmail.com

[2] Department of English, University of Lagos, Nigeria

[1&2] Digital Literature Research Cluster, Centre for Digital Humanities, University of Lagos, Nigeria

Abstract

This study examines the impact of migration on the publishing timelines, thematic focus, awards, and translations of Nigerian diaspora writers Chimamanda Ngozi Adichie and Ben Okri. Employing a mixed-method approach that integrates qualitative and quantitative analyses, the research explores how migration influences their literary journeys and expands the global reach of Nigerian literature. Utilizing digital humanities tools such as KnightLab's TimelineJS, Flourish, and Google Sheets, the study visualizes data from reputable sources like Amazon and Goodreads to analyze each author's international achievements. Findings indicate that migration significantly shapes Adichie's and Okri's thematic explorations, addressing complex issues of identity, race, and cultural belonging. This research demonstrates how digital visualization offers insights into the intersection of migration and literary success, illustrating how these authors navigate and portray diasporic identities. Ultimately, the study contributes to African literary studies by highlighting the role of migration in enhancing the global influence and thematic depth of Nigerian literature.

Keywords : Migration, Nigerian Diaspora, Chimamanda Ngozi Adichie, Ben Okri, Digital Humanities, Comparative Literature, Visualization

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Résumé

Cette étude examine l'impact de la migration sur les calendriers de publication, les axes thématiques, les distinctions littéraires et les traductions des écrivains de la diaspora nigériane Chimamanda Ngozi Adichie et Ben Okri. En adoptant une approche mixte intégrant des analyses qualitatives et quantitatives, la recherche explore comment la migration influence leurs parcours littéraires et élargit la portée mondiale de la littérature nigériane. En utilisant des outils des humanités numériques tels que TimelineJS de KnightLab, Flourish et Google Sheets, l'étude visualise des données issues de sources fiables comme Amazon et Goodreads pour analyser les accomplissements internationaux de chaque auteur. Les résultats montrent que la migration façonne de manière significative les explorations thématiques d'Adichie et d'Okri, en abordant des questions complexes liées à l'identité, à la race et à l'appartenance culturelle. Cette recherche met en évidence la manière dont la visualisation numérique permet de mieux comprendre l'intersection entre migration et succès littéraire, illustrant comment ces auteurs naviguent et représentent les identités diasporiques. En fin de compte, l'étude apporte une contribution aux études littéraires africaines en soulignant le rôle de la migration dans le renforcement de l'influence mondiale et de la profondeur thématique de la littérature nigériane.

Mots-clés : Migration, Diaspora nigériane, Chimamanda Ngozi Adichie, Ben Okri, Humanités numériques, Littérature comparée, Visualisation

1.0. INTRODUCTION

Following Nigeria's independence in 1960, the nation became a prominent center for African literary talent, exemplified by authors like Wole Soyinka, who won the Nobel Prize in Literature, and Chinua Achebe, celebrated for *Things Fall Apart* (1958), which critiques post-independence Nigerian politics. Despite Nigeria's rich cultural landscape, many emerging writers sought international networks, moving abroad to sustain their careers. This migration shaped their literary journeys and led to increased recognition both within and outside Nigeria.

The renowned Nigerian author Okey Ndibe highlights Nigeria's rich literary heritage, referencing iconic figures such as Usman dan Fodio's daughter, Nana Asma, Ben Okri, Chinua Achebe, and Buchi Emecheta (Rebekah 28). In the early 2000s, authors like Chimamanda Ngozi Adichie and Helon Habila contributed to a resurgence in Nigerian literature, achieving global recognition with works such as Adichie's *Americanah* (2013). According to critics Pius Adesanmi and Chris Dunton, this new generation of Nigerian writers has experienced "near-instant canonization," largely due to their ability to navigate international literary spaces (Adesanmi & Dunton 11). Central to their success is the diasporic experience, which allows authors like Adichie and Okri to engage with complex issues of identity, race, and nationality. These themes not only resonate with global audiences but also contribute to a revival and reinvention of Nigerian literature.

However, despite the increased visibility of Nigerian diaspora authors, significant gaps exist in understanding how migration influences their creative trajectories, global reach, and thematic choices. Historically, Nigerian authors have faced challenges within the local publishing industry, including inadequate infrastructure and restrictive market dynamics. These barriers often push authors to seek Western publishing avenues, raising critical questions about how such migration shapes their narratives and impacts their representation of Nigerian identity. This gap in the literature underscores the need for innovative methodologies to systematically examine the intersections of migration, literary success, and thematic evolution.

In addressing this gap, Opeibi projected that digital humanities (DH) would emerge as a transformative field, employing cultural, social, and technological approaches to study literature. DH tools such as data visualization and computational analysis offer innovative frameworks for examining the publishing timelines, translations, and awards of diaspora authors, revealing patterns that might otherwise remain hidden (Opeibi 165). By leveraging these tools, this study aligns with Opeibi's declaration and seeks to provide new insights into how migration influences the creative and professional trajectories of Chimamanda Ngozi Adichie and Ben Okri. Through this approach, the research not only addresses the absence of systematic analysis in this domain but also establishes a replicable model for exploring the broader implications of migration on African literature.

1.1. Migration, Publishing, and the Diaspora Experience of Nigerian Writers

Ayodeji revealed that migration has offered Nigerian authors, particularly diaspora writers like Chimamanda Ngozi Adichie and Ben Okri, greater access to global audiences through Western publishing platforms (Ayodeji 75). Through their experiences in the diaspora, Adichie's and Okri's works, such as *Americanah* and *The Famished Road*, have garnered significant attention, translated into multiple languages, and widely distributed, showcasing the broad appeal of Nigerian narratives on the global stage. Hewett further affirmed that these writers' works are lauded for tackling themes of identity, race, and belonging—central concerns shaped by the diasporic experience (Hewett 82). These narratives explore Nigerian culture from both local and international perspectives, bridging Nigerian and global experiences.

Historically, Nigerian authors have faced significant barriers within the local publishing industry, where restrictive political climates, limited infrastructure, and high production costs stymie fiction publications. As a result, Nigerian bookstores have typically focused on educational and religious texts over literary works. Even accomplished writers residing in Nigeria often seek foreign agents or publishers to gain a wider audience, reinforcing a dependency on Western publishing avenues to secure international visibility (Ezema and Ajeluorou). This reliance, while essential for reach, raises important questions about how these external publishing influences might shape Nigerian literary narratives to cater to foreign audiences, potentially altering authentic representations of Nigerian culture and perspectives.

The theme of migration itself is not new to Nigerian literature. Earlier authors, including Chinua Achebe, Wole Soyinka, and Buchi Emecheta, often depicted characters returning to Nigeria with Western education, eager to contribute to the nation's progress. These "been-to" narratives capture characters grappling with identity as they attempt to reintegrate into the Nigerian society post-migration (Egbunike, 210; Ibukun; and Raphael).

Furthermore, this exploration of diaspora life and identity is complemented by the adoption of digital humanities (DH) methods, which not only enhance our understanding of contemporary Nigerian literature but also facilitate a deeper analysis of the authors' transnational experiences. As such, both Adichie and Okri illustrate how migration complicates notions of cultural belonging while simultaneously benefiting from the tools provided by DH to visualize their publishing timelines, translations, and international recognition. Thus, the interplay between migration and digital methodologies enriches our comprehension of the complexities inherent in sustained diaspora life.This study illustrates how the migratory paths of Adichie and Okri have influenced their thematic focus, style, and narrative reach. By mapping out the evolution of their works and achievements, the research reveals how migration has not only broadened the scope of Nigerian literature but also positioned it within a global literary dialogue. Ultimately, this comparative digital analysis enriches the understanding of Nigerian literature's transformative role in a globalized world, where

diasporic voices continue to shape narratives around culture, identity, and transnational belonging.

1.2. Selected Nigerian Diaspora Writers for the Research

Nigerian diaspora writers have played a pivotal role in shaping the global perception of Nigerian literature. Among them, Chimamanda Ngozi Adichie and Ben Okri stand out for their contributions to postcolonial and contemporary literature. These authors, residing primarily outside Nigeria, explore complex themes of identity, race, and cultural belonging while earning international acclaim. Their diasporic experiences and global achievements make them ideal representatives for examining the interplay between migration and literary success.

1. **Chimamanda Ngozi Adichie**, celebrated for her novels and nonfiction, immigrated to the U.S. at 19. She has consistently been recognized as one of the most influential African writers, named among New African magazine's Top 100 Most Influential Africans in 2019. In 2017, she became the second Nigerian elected to the American Academy of Arts and Letters. Her notable works include *Half of a Yellow Sun* (2006), *Purple Hibiscus* (2003), and Americanah (2013), which have been translated into multiple languages and widely acclaimed for their thematic depth and cultural resonance.
2. **Ben Okri**, a Nigerian poet and novelist born in Minna in 1959, moved to England in 1978. As a prominent figure in postmodern and postcolonial literature, Okri is often compared to Salman Rushdie. His novel *The Famished Road* (1991), which won the Booker Prize, and the Commonwealth Authors Prize (1987), has cemented his place in global literary history. His works, infused with magical realism and diasporic insights, have been translated into several languages, further amplifying their international appeal.

The selection of these writers is informed by their global prominence and their unique ability to bridge Nigerian and international literary landscapes. Shercliff conducted a poll in the UK publishing sector asking respondents to name Nigerian authors. While Chinua Achebe, Chimamanda Ngozi Adichie, Wole Soyinka, and Buchi Emecheta were frequently mentioned, Ben Okri's name was notably absent, despite his international achievements and residence in the West (Shercliff 16). This omission highlights the complexities surrounding the recognition of Nigerian diaspora authors and underscores the need for research that contextualizes their contributions and migratory experiences.

Both Adichie and Okri exemplify how migration shapes thematic focus, narrative strategies, and global reach. This study focuses on their literary achievements to explore how migration influences the broader trajectory of Nigerian literature and its reception in the global arena.

2.0. STATEMENT OF THE PROBLEM

The international success of Nigerian literature, particularly for authors like Chimamanda Ngozi Adichie and Ben Okri, often depends on opportunities found outside Nigeria. Migration allows these writers to access the resources, publishers, and audiences necessary for global reach, yet raises questions about how this impacts their narratives and representations of Nigerian identity (Adesanmi and Dunton 11; Ezema). While earlier works explored “been-to” experiences of returning home, contemporary literature often delves into the complexities of sustained diaspora (Egbunike 211; Awelewa 101).

Despite this significance, limited research has examined how migration shapes the achievements of Nigerian diaspora authors or utilized digital humanities (DH) tools to visualize their timelines, awards, and global impact. Few studies provide comparative analyses of such authors’ publishing journeys, particularly through DH methods, which

remain underutilized in African literary studies (Opeibi 162).

This study fills these gaps by applying DH tools to analyse and visualise the success trajectories of Adichie and Okri, offering new insights into the role of migration in shaping Nigerian literature's global influence.

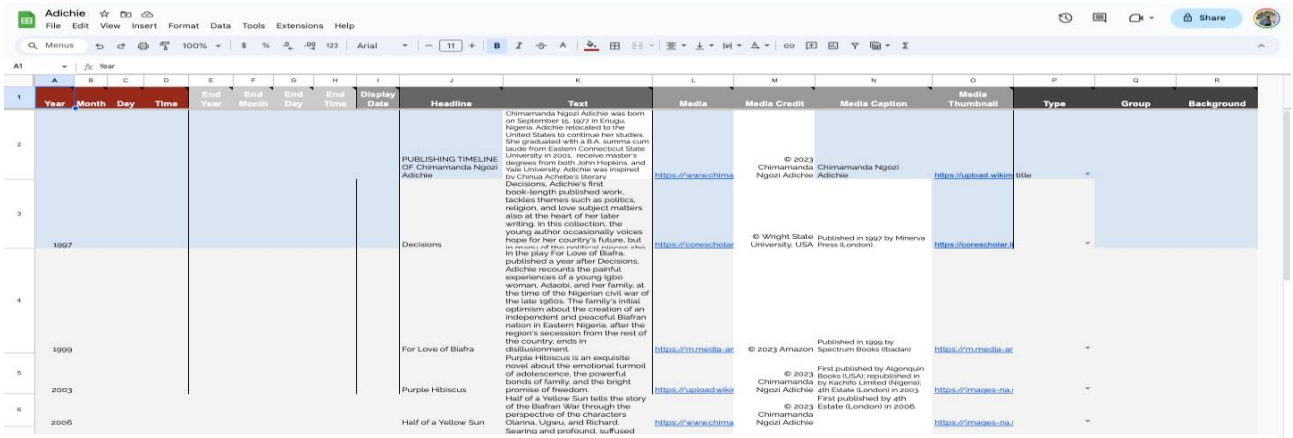

Figure 1: Google Sheet showing the authors' timeline © *2023* [Nig-EWriters by John Henry] used in creating the entries for the KnightLab Timeline for the selected authors.

3.0. RESEARCH OBJECTIVES

The main purpose of this study is to compare the works of the selected diaspora writers with the intention of providing visualized data that will provide answers to the following research questions: In this context, the objectives of this research will help provide answers to the following research questions:

1. What are the publishing timelines, awards, and translations of the selected diaspora authors?

2. How has migration impacted their writing and publishing journey?

4.0. METHODOLOGY

A mixed research method was used for this investigation, as it is a combination of qualitative and quantitative methods. A simple random sampling technique was used to select two authors, Ben Okri and Chimamanda Ngozi Adichie, the authors and novels chosen for this study satisfy Griswold's very broad definition of the Nigerian novel, which is "fiction of sixty or more pages, intended for adults or near-adults, and written in English by someone born in or a permanent resident of Nigeria" (Griswold 522). The important difference is that this study will focus on the writing of Nigerian emigrants. This study focuses on the fiction created by Nigerian writers in the diaspora because the majority of their widely read novels are published in Europe and the United States. Various free information technology-mediated digital humanities tools (WordPress, KnightLab, Flourish, and Google spreadsheets) will be used to visualise potential network analyses and similarities among the author's timelines, awards, translations, and publishing journeys.

Data for this study were gathered from reputable websites such as Amazon Books, Goodreads, and Wikipedia, as well as the official websites of the selected writers, as well as the websites of selected book publishers. This data was populated on a Google Excel sheet provided by the DH platforms.

5.0. RESULTS

KnightLab (TimelineJS, Storyline, and StoryMapJS) was utilised for the visualisation of

the data because it is a free source user-friendly interface that is simple to use without extensive technical skills. Another significant reason KinghLab was chosen is that it allows the importation of data from a variety of sources, including Google Sheets and other spreadsheet apps, making it simple to update and manage for visualisations.

5.1. Research Question 1: What are the publishing timelines, awards, and translations of the selected diaspora authors?

Figure 2: Image showing the publishing timelines, awards, and translations of Chimamanda Ngozi Adichie and Ben Okri were analyzed using digital humanities tools such as KnightLab's TimelineJS and StorylineJS, which revealed significant patterns in their literary trajectories. Visualization of their publishing timelines showed that both authors began their careers in Nigeria, with Adichie's *Decision* (1997) and Okri's *Flowers and Shadows* (1980) marking their early entries into literature. However, their migration to the United States and the United Kingdom, respectively, marked a turning point, as their subsequent works were published by prominent Western publishers. Adichie's novels, including *Half of a Yellow Sun* and *Americanah*, were published by Alfred A. Knopf, while Okri's *The Famished Road* and *The Last Gift of the Master's Artist* were published by Penguin Random House. These visualizations highlight how migration facilitated access to global publishing platforms, enabling broader distribution and international recognition. recent novel was published by *Alfred A. Knopf* in New York City, U.S. While Okri's recent novel is also published by *Penguin Random Houseby* in the USA as well. © *2023 Nig-EWriters by John Henry*

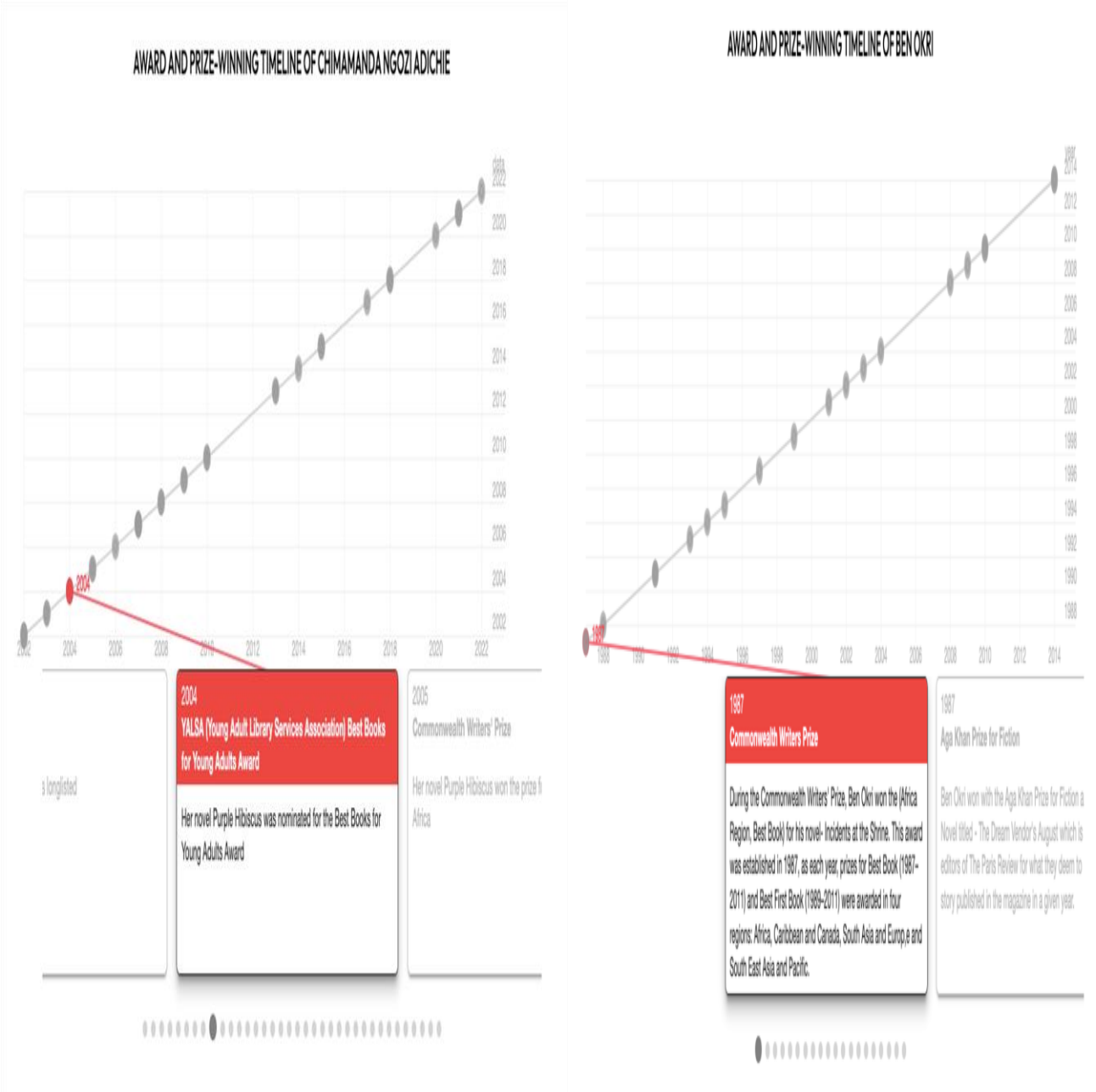

Figure 3: Image showing information from the authors' official websites, Goodreads, Amazon, and Wikipedia about the awards, prizes earned, nominated novels, prize titles, and the year they were granted. KnightLab- StorylineJS was used as the visualisation tool, and a Google sheet template was provided to fill in the data before the results were generated automatically. *© 2023 Nig-EWriters by John Henry*

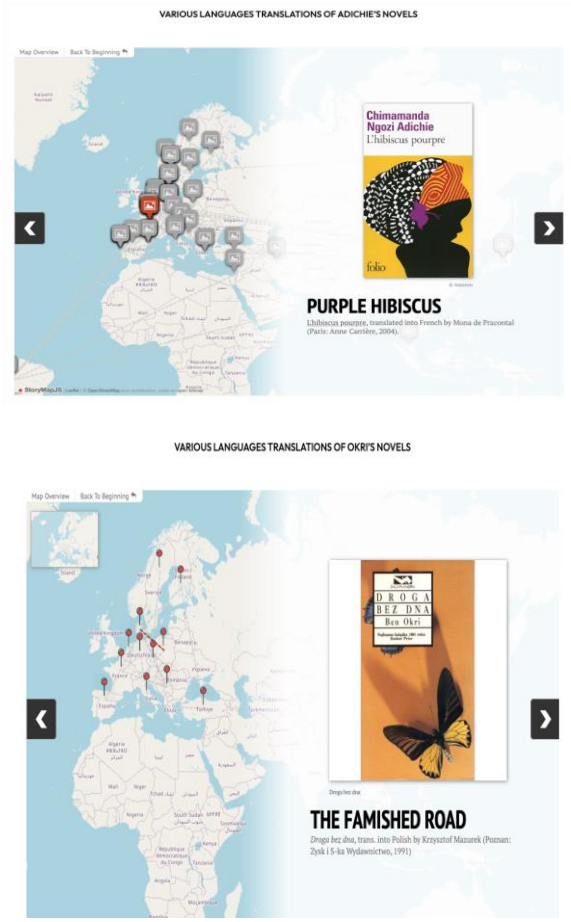

Figure 4: Figure 6: This image illustrates the translations of these authors' novels into various languages. The information was sourced from the authors' official websites, Goodreads, Amazon, and the CEREP DH project led by Daria Tunca at the University of Liège. *KnightLab's StoryMapJS* served as the visualisation tool, and the results were automatically generated after populating a Google Sheet template with the data.

5.2. Research Question 2: How has migration impacted their writing and publishing journey?

Migration profoundly impacts the writing and publishing journeys of Chimamanda Ngozi Adichie and Ben Okri, shaping their thematic concerns, narrative aesthetics, and access to global publishing platforms. Relocation has enabled these writers to draw on their diasporic experiences, resulting in works that resonate with diverse audiences and address complex themes of identity, race, and belonging. Additionally, their affiliation with Western publishers has expanded their global reach, offering platforms that ensure wider recognition and distribution.

5.2.1. Chimamanda Ngozi Adichie

Adichie's migration to the United States at 19 significantly influenced her literary trajectory, providing access to educational opportunities and publishing networks that shaped her narrative style and thematic focus. Her novels reflect a synthesis of her Nigerian heritage and her diasporic experiences, enabling her to engage with global issues while preserving the authenticity of Nigerian culture.

1. *Purple Hibiscus* (2003): Adichie's debut novel, published by Algonquin Books (U.S.), reflects her diasporic lens while exploring themes of familial conflict, religious extremism, and the quest for freedom. Written during her studies at Johns Hopkins University, the novel won the Commonwealth Writers' Prize for Best First Book and was translated into multiple languages, including French, German, and Spanish, broadening its accessibility and appeal.
2. *Half of a Yellow Sun* (2006): Published by Knopf (U.S.), this novel examines the Nigerian Civil War through a diasporic perspective. Adichie's fellowship at Princeton University provided the intellectual and creative space to explore war's effects on identity and relationships. The book's translations into Portuguese, Chinese, and Dutch, among others,

underscore its global impact, while its awards, including the Orange Prize for Fiction, reflect its critical acclaim.

3. *The Thing Around Your Neck* (2009): This collection of short stories, also published by Knopf, delves into themes of cultural clash and identity negotiation, deeply influenced by Adichie's bicultural experiences. Its success, marked by the Dayton Literary Peace Prize, highlights the universal relevance of her diasporic narratives.
4. Americanah (2013): Published by Knopf and Fourth Estate (U.K.), *Americanah* explores race, migration, and the challenges of belonging. Drawing on her transnational experiences, Adichie crafts a narrative that critiques social constructs while deepening her engagement with global audiences. The novel's translation into numerous languages and its inclusion in literary curricula worldwide reflect its enduring influence.

5.2.2. Ben Okri

Ben Okri's migration to England at 19 positioned him within global literary networks that shaped his ideological and aesthetic sensibilities. His works, rooted in magical realism and informed by his diasporic outlook, address themes of spiritual resilience, cultural hybridity, and the transformative power of storytelling.

1. *Flowers and Shadows* (1980): Okri's debut, published by Longman (Nigeria and U.K.), reflects his early diasporic perspective, exploring themes of corruption and societal decay. Its translations into French and German marked the beginning of his international literary journey.
2. *The Famished Road* (1991): Published by Jonathan Cape (U.K.), this Booker Prize-winning novel exemplifies Okri's signature magical realism. Migration broadened his access to Western literary traditions, enabling him to craft a narrative that bridges Nigerian folklore with universal human struggles. Translated into over 20 languages, the novel solidified his status as a global literary figure.
3. *Infinite Riches* (1998): Published by Phoenix House (U.K.), this novel blends Okri's Nigerian roots with broader global themes, reflecting his diasporic identity. Its translations into French and Italian demonstrate its cross-cultural resonance.
4. *Dangerous Love* (1996): Published by Weidenfeld & Nicolson (U.K.), this urban narrative reflects Okri's evolving engagement with diasporic themes of alienation and self-discovery. Its translations into Spanish, German, and Dutch further highlight the global appeal of his diasporic voice.

Through their affiliation with major international publishers such as Knopf, Algonquin Books, and Jonathan Cape, Adichie and Okri have gained global platforms that amplify their voices. Migration has not only influenced their thematic preoccupations—addressing identity, belonging, and transnational experiences—but has also shaped their narrative styles, blending Nigerian traditions with broader literary movements. By navigating these dual spaces, Adichie and Okri exemplify how diaspora enriches literary production, enabling Nigerian literature to engage in global dialogues and reach diverse audiences. This underscores migration's pivotal role in transforming their creative and professional trajectories.

6.0. DISCUSSION OF RESEARCH FINDINGS

This study offers a nuanced exploration of the publishing timelines, awards, and translations of Chimamanda Ngozi Adichie and Ben Okri, leveraging digital humanities (DH) tools such as KnightLab's TimelineJS and StoryMapJS. The visualizations generated by these tools go beyond mere representation; they reveal hidden patterns and validate the profound influence of migration on these authors' literary trajectories.

Mapping the publishing timelines through TimelineJS revealed distinct trends in Adichie's

and Okri's careers. Both authors began publishing their initial works in Nigeria (*Decision*, 1997, and *Flowers and Shadows*, 1980, respectively), but their subsequent relocations to the United States and the United Kingdom marked a significant shift in their publishing dynamics. Post-migration, Adichie collaborated with prominent American publishers like Alfred A. Knopf for works such as *Half of a Yellow Sun* and *Americanah*, while Okri partnered with Penguin Random House for *The Famished Road* and *The Last Gift of the Master's Artist*. This shift highlights the critical role of migration in providing access to global publishing platforms, facilitating wider distribution, and elevating the visibility of Nigerian narratives in international literary spaces.

The visualizations of award timelines using StorylineJS further underscore the impact of migration on their global recognition. Adichie's Commonwealth Writers' Prize for *Purple Hibiscus* and Okri's Booker Prize for *The Famished Road* reflect how diasporic platforms amplify opportunities for Nigerian writers. These awards not only affirm the literary merit of their works but also draw attention to the thematic depth and universal resonance of Nigerian literature, as shaped by their diasporic perspectives.

The translation analysis visualized through Flourish provides additional insights into their global reach. Both authors' works have been translated into over 20 languages, including French, German, and Spanish, demonstrating how migration positions Nigerian literature within a global cultural dialogue. This breadth of translation underscores the accessibility and adaptability of their narratives across diverse linguistic and cultural landscapes, validating the role of migration in broadening the reception of Nigerian literature.

The findings corroborate Opeibi's assertion that DH tools facilitate layered insights into complex literary phenomena. By visualizing these data points, the study discerns patterns in publishing timelines, awards, and translations that might otherwise remain obscured (Opeibi 163). These patterns affirm that migration is not merely a background factor but a transformative force that enhances the international resonance of Nigerian literature.

The discursive role of DH tools in this research lies in their ability to integrate textual and contextual analyses, offering a comprehensive understanding of the trajectories of Adichie and Okri. Through these tools, the study provides a replicable model for analyzing the intersections of migration and literature, contributing significantly to African literary studies and digital humanities discourse.

ß7.0. RECOMMENDATIONS

The contributions of Nigerian diaspora writers, like Chimamanda Ngozi Adichie and Ben Okri, continue to shape both Nigerian literature and its international appeal. To further promote and enhance the impact of diaspora writers, the following recommendations are suggested:

1. Establishing platforms that connect Nigerian diaspora writers with writers in Nigeria could foster productive exchanges. These networks could support mentorship, shared publishing resources, and collaborative projects, strengthening bonds within the literary community and promoting a unified Nigerian literary identity.
2. Encouraging Nigerian diaspora authors to participate actively in global literary festivals, translation initiatives, and other international platforms could increase the visibility of Nigerian literature. Translating Nigerian works into more languages and facilitating dialogue at global events can help extend the reach and appreciation of Nigerian literary culture worldwide.
3. Recognizing the achievements of Nigerian diaspora authors through awards and honours specific to their contributions can inspire emerging writers and reinforce pride in Nigerian literary heritage. Such awards can highlight the cultural significance of these works and encourage writers to maintain authentic representations of Nigerian narratives within global literature.

8.0. CONCLUSION

This study highlights the significant impact of migration on the literary careers of Chimamanda Ngozi Adichie and Ben Okri, showcasing how it shapes their themes, narrative styles, and global reach. By using digital humanities tools such as TimelineJS and StoryMapJS, the research effectively charts their achievements and illustrates the role of migration in expanding Nigerian literature's influence. The findings reveal that migration not only provides access to wider publishing networks but also enriches the authors' exploration of identity, race, and belonging. Their diasporic experiences have deepened the cultural and thematic richness of their works, connecting Nigerian and global audiences. This research offers a replicable model for studying how migration influences literature and underscores the value of digital humanities in African literary studies. It reinforces the role of migration in fostering broader perspectives and enhancing the global standing of Nigerian literature.

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DIGITAL TOOLS USED FOR DATA VISUALIZATION

1. Northwestern University Knight Lab- https://knightlab.northwestern.edu/
2. Daria Tunca's Digital Corpus - Center for Teaching and Research in Post-colonial Studies (CEREP) University of Liège- http://www.cerep.ulg.ac.be/bibliographies/
3. John Henry's Nig-ewriters Coprus https://nig-ewriters.rarebook-ubfc.fr/writers-journey/

AUTHORS' SHORT BIOS

John Henry holds a B.Ed in Library and Information Science, an M.Ed in Educational Media and Technology (Tai Solarin University, Nigeria), and an M.A in Rare Books and Digital Humanities (Université Bourgogne-Franche-Comté, France). He has certifications in Teaching and Learning (CIE) from Cambridge University, U.K.

A recipient of the ERASMUS+ Mobility Grant and ISITE-BFC Rare Books Project Award, he is the Academic Research Digital Librarian at African Leadership University (Mauritius and Rwanda) and an Associate Researcher at the Centre for Digital Humanities, University of Lagos, Nigeria. He is pursuing a split-site PhD in Digital Humanities (Université de Bourgogne and University of Lagos) and an online PhD in Society, Technology, and Culture (UOC, Spain).

Abayomi Awelewa is a lecturer and a researcher in the Department of English at the University of Lagos, Nigeria. He is also a publisher and a communications expert. His fields of research include African and African diasporan literature, Digital Humanities, gender and trauma studies. He holds a PhD in English literature from the University of Ibadan, Nigeria. Before he joined the University of Lagos, he worked at the Mcpherson University, Seriki Sotayo in Ogun State, Nigeria. Awelewa also worked at HarvestPlus, XLR8 and Literamed Publications in a career spanning over 20 years.