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Canadian Journal of Information and Library Science, Volume 42, Numbers 3-4, September-December 2018, pp. 249-277 (Article)

Published by University of Toronto Press

Knowledge Production Ethos and Open Access Publishing: Africa in Focus

L'éthos de la production de connaissances et l'édition en livre accès : Regard sur l'Afrique

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Abstract: This article examines open access from the viewpoint of a neo-liberal science ethos such as article-processing charges, epithets of predatory publishing, and the texture of global open access policies. Synthesizing existing literature in the field, the article avers that, in its present structure, open access appears to be a tool for propagating a Western mode of knowledge. Existing frameworks for studying knowledge production have points of discontinuities that create a lever for excluding knowledge not produced in other mainstream contexts from a global reckoning. Finally, we engage the identified discontinuities and suggest how open access could be made to work in Africa.

Keywords: knowledge production, open access, publishing, Africa, predatory publishing

Résumé : Cet article examine le libre accès du point de vue de l'éthos scientifique néolibérale, notamment les frais de traitement des articles, les épithètes d'éditeurs prédateurs et la texture de politiques mondiales en matière de libre accès. En synthétisant la littérature existante du domaine, cet article affirme que, avec sa structure actuelle, le libre accès semble être un outil pour propager un mode de connaissances occidental. Des cadres existants pour étudier la production de connaissances ont des points de discontinuité qui créent un levier pour exclure du jugement mondial les connaissances produites dans d'autres contextes. Finalement, nous examinons les discontinuités identifiées et suggérons des moyens pour que le libre accès puisse fonctionner en Afrique.

Mots clés : production de connaissance, libre accès, édition, Afrique, éditeurs prédateurs

Introduction

Open access publishing is predominantly concerned with how to facilitate timely and equitable access to knowledge, particularly for publications in periodicals, through the World Wide Web free of charge to readers. However, dominant opinions and frameworks for understanding knowledge production are cosmopolitan and mainstream, often neglecting the differences in the contexts in which other researchers and publishers work. Dominant knowledge production ethos reflects the

global disparity in the growth and development and benefits of open access and, further, has given rise to a mutation in the mission and philosophy of open access.

This article examines open access from the viewpoint of a neo-liberal science template, including article-processing charges (APCs), the notion of predatory publishing, and aspects of the texture of global open access policies. Synthesizing existing literature in the field, the article starts by examining the concept of knowledge production and avers that, in its present epistemology, it is a tool for propagating a Western mode of knowledge. We examined existing frameworks and identified points of discontinuities and show that these discontinuities create a lever for excluding knowledge produced in other contexts, such as African knowledge artefacts and outcomes from a global reckoning. We opine that dominant knowledge production frameworks and the structure of open access are reinforced by science power dynamics. Finally, we engage the meaning of knowledge production and open access from an African perspective, discussing the identified discontinuities, and suggest how open access could be made to work in Africa.

The concept of knowledge production

Knowledge production is a very complex phenomenon. Primitively but practically, human knowledge is personal and local to the carrier, and it resides in the human brain (or tacit); it is unique, complex, dynamic, eclectic, and non-formal (Ngulube, Dube, and Mhlongo 2015). It is not tangible in the first place and does not reside in any technological system or other media (Nonaka 1994; Nonaka and Takeuchi 1995). In this regard, therefore, every human community produces knowledge; the key issue is that the essential definitions attributed to knowledge from a universal interpretation and perspective may be lacking.

Allusions to Sousa's (2011) opinions suggest that knowledge production has implications for making knowledge visible, valuable, and useful, and this allusion offers some insight; it also sheds light on why knowledge production should be so used. Sousa's opinion aligns with the idea that knowledge production occurs when certain content of the human brain that has developed through various processes is committed to tangible form (Gray 2008). Expatiating on Sousa's (2011) description, "visible" means capable of being seen, recognized, apparent, manifest, or obvious. "Visible" also relates to being tangible, available, and accessible, and, to this extent, the wider the reach of the knowledge, the wider the knowledge is said to be visible. Knowledge production therefore means the transformation of a certain content about a subject in the brain of a human being into tangible formats. It has become customary often to assess produced knowledge on the template of relevance, utility, accountability, social visibility, and sustainability (Glover, Webb, and Gleghorn 2001; Kjørstad 2008).

The variety of contents, formats, and media of produced knowledge differ very significantly today (Lehman and Cordier 2015), and they are expanding rapidly both in the manual and electronic formats—in text, audio, and video formats. They are available in such media as periodicals and monographs, fact sheets, *reports*, summaries, data, software, portable *guides*, and audio/videotapes. They are available as finished or unfinished, abandoned, completed, or ongoing

materials, and they are available in meetings, conferences, and workshops, among others. Many researchers consider research and researching as strategies for producing knowledge—that is, they are the avenues through which human beings synthesize the events in the world around them and possibly make available the outcome of their synthesis to the world (Latour and Woolgar 1986; Canagarajah 1996, 2008; Curry and Lillis 2017). There are also other researchers whose opinions tilt towards publishing as a strategy of knowledge production.

Modern research and publishing, however, are fraught with inequality (Allison and Stewart 1974; Allison 1980; Allison, Long, and Krauze 1982; Altbach and Lewis 1996; Chow 2004; Abramo, D'Angelo, and Di Costa 2011; Abramo, D'Angelo, and Solazzi 2011; Allan 2011). Besides being technology and resource heavy, knowledge production is a meta allusion that depends on the further transformation of human beings through the complex processes of modern education. Many researchers in developing areas mainly have attributed the low capacity in research and publishing in Africa to a consequence of cultural imperialism—that is, researching and publishing have been shaped to legitimatize policies that entrench existing unjust power relations that exist between developed and developing countries (Thussu 2010). The dominant conception about knowledge production relates clearly to events that Robertson (2006) describes as the instrumentalization of knowledge and Kauppinen's (2013) commodification or marketization of knowledge or academic capitalism, among others (Slaughter and Leslie 1999). In these events, only knowledge that conforms to Western stereotypes must be embodied and legitimized.

Modern knowledge systems, and, in fact, development in general, are hinged entirely on Western or mainstream civilization, often presented as the uppercase wellspring of human learning and well-being, while the Orient is generally characterized by antiquarian and parochial wisdom. Researchers have shifted attention away from conceiving knowledge as an artefact that serves immediate, specific, personal, and community needs to that of an artefact that is not only tangible in one form or the other but also has instrumental market and other values and survives international criteria in its mode of conceptualization, packaging, and presentation (Holden 2004; United Nations Educational, Scientific and Cultural Organization 2009; Ngulube, Dube, and Mhlongo 2015). While reasoning and thinking are natural with humans, the transformation of one's reasoning and thinking into a form that others can consume requires further human and societal development, and this requirement is complex (Campbell 1997). For example, all humans have some knowledge about how to address basic issues around them, even if it means consulting others, and they also share their knowledge with others when and as necessary and as much as they can (Walczak 2008). But it is not all humans that commit their problem-solving capacity on paper; it is not all humans that use computers and attend conferences and workshops.

Dominant knowledge production frameworks

Many researchers have attempted to develop frameworks for understanding knowledge production. Weber's (1919) secular asceticism provides a good guide

in this respect. He posits that academics should be guided by specialization, individual self-sacrifice, and ethical neutrality, which represent the cornerstone of modern research. He further suggests that an academic should "put blinders on himself" in an expectation that further research in the area could make existing research findings outmoded. Weber (1919) cautioned that academics and scholars should keep their own political and moral beliefs in check, follow standard procedures, observe protocols, and ensure that they do not propagate own ideals. Weber has been heavily criticized (Kolko 1959; Eisenstadt 1971; Gregg 2013).

Robert Merton's (1942) normative ethos, or norms or structures of science, appear to take Weber, Baehr, and Wells's (2002) asceticism further. Merton's (1942) ethos consists of four sets of institutional imperatives: communism, *universalism*, disinterestedness, and organized scepticism. By communism, Merton meant that the results of academic research should be the common property of the whole global scientific community and not that of the researcher. By universalism, he recommended that scholars should use pre-established impersonal criteria to create universal or objective knowledge detached from the creator; claims are thus related to objective data and transcend race, class, political, and/or religious barriers (Macfarlane and Cheng 2008). Merton's (1942) third norm is disinterestedness—that is, scientists should have no emotional or financial attachments to the work they do; academics should be persons of high moral standards who would accept and report the truth, even if the truth proves the scientist wrong. Their reward should be through the recognition of their achievements and not based on any monetary gain. Finally, the fourth norm—organized scepticism—demands that the scholar remains sceptical about the outcome of his or her own research, allowing chances for the findings to be disputed or overwritten by further research. This norm invites caution on the part of scientists in reaching conclusions, in anticipation that academics will continually challenge conventional wisdom.

The popular opinions by Gibbons et al. (1994) have also contributed to our understanding of knowledge production. They presented knowledge production as occuring in Mode 1 and Mode 2 types. In Mode 1, institutions are the major producers of knowledge, and they transfer the knowledge to organizations and other entities that will use it. Knowledge here is produced via disciplinary and, primarily, cognitive contexts. This knowledge is usually produced through research and then shared through the media; Gibbons and colleagues refer to this mode as traditional. In Mode 2, knowledge production is a joint undertaking, created in broader, trans-disciplinary social and economic contexts, such that production and transfer of knowledge co-occur. Mode 2 focuses on application, diversity, and heterogeneity of skills and capacity required to address human challenges, growth in trans-disciplinarity as a strategy for increasing research efficiency, and the need for increased social accountability and quality control. Varieties of Gibbons et al.'s (1994) thesis exist; Carayannis, Campbell, and Rehman (2016) have described the Mode 3 knowledge production that encapsulates systems theories and systems as well as innovations and knowledge and how they relate to knowledge creation and technology transfer, among others. Gilbert, Audretsch, and McDougall's

(2004) entrepreneurial university derives from, and also reinforces, Gibbons et al.'s (1994) Mode 2 knowledge production framework.

Furthermore, the triple helix of university-industry-government relations (Etzkowitz and Leydesdorff 2000) can also be classed as a knowledge production framework. In this model, attention is paid to how knowledge produced by researchers in academic institutions is transformed into products and services by the industry within available policies and frameworks of government. Ziman (2000) has expanded the discourse on the triple helix by identifying an industrial knowledge production framework that he classes as proprietary, local, authoritarian, commissioned, and expert.

It can be seen that dominant knowledge production frameworks are cast within constellations of what occurs in modern academic institutions. Similar to Weber's (1919) and Merton's (1942) opinions (Eliaeson 1990; Houghton and Charles 2010), Benner (2012) has observed that Weber's (1919) thesis was cast within the environment of the growing power and influence of politicians and bureaucrats in Germany in the early part of the twentieth century and cannot be generalized. The Mertonian science frameworks have also been heavily criticized; they are constructivist, and they neglect the dynamics within the varied context in which researchers work. Mittroff (1974), Mulkay (1974), and Ziman (2000), among others, have demonstrated that there exist norms that contradict Merton's (1942) ethos. Mittroff (1974) used the terms "solitariness," "particularism," "interestedness," and "organized dogmatism" to capture forms of norms that differ from Merton's (1942). Mertonian norms are strict and binding on scientists' behaviour (Barnes and Dolby 1970), and Gibbs (1981) has suggested that normative properties could describe the knowledge production framework instead of the constructivist dogma. The Mertonian frameworks do not accommodate the plural nature of the human society; they are stereotypical and neglect non-constructivist paradigms (Barnes and Dolby 1970; Mulkay 1974, 1980; Meyer and Rowan 1977; Gibbs 1981; Zuckerman 1988; Slaughter and Rhoades 2004).

From Africa, come many voices, including Nigeria's Claude Ake (1979) whose work *Social Science as Imperialism* is not only seminal but shows clearly that modern knowledge production is often a political project (Ake 1986). He suggested that the social science epistemic bent in the world is not a neutral because it is aimed at reifying and reconstructing the original social order, a form of knowledge imperialism. In this new order, the values from the West, as well as Western ideas and practices, are foisted on Africa through theories and methodologies as well as paradigms and narratives that paint the picture of the path that societies that wish to develop must tow (Ake 1986; Adejumobi 2017; Adesina 2017).

Points of discontinuity in the dominant knowledge production framework

Anderson et al. (2010) have identified what they call points of discontinuity or "joints" where there exist encounters of new or somewhat different formulations of non-normative fixtures of science. The four discontinuities are (1) the behaviour of new entrants to the social system—these are learners whose skills, resources, and behaviours may not conform to normative fixtures (Nwagwu 2015;

Xia et al. 2015); (2) when movement occurs from a social system into a related, but different, arena—for example when scholars want to view local and indigenous knowledge with the lens of Western science (Mazzocchi 2006; Mohanty 2013); (3) environmental change, such as open access publishing (Tennant et al. 2016); and (4) when new scientific instrumentation opens new possibilities that may allow for fraud—for example, APCs. We refer to knowledge production taking place in these discontinuities as knowledge production outside the mainstream context.

Truth (2012, 90) has opined that knowledge production and distribution is highly "entangled" with the "colonial power matrix." Horner, Lillis, and Curry (2011, 444) have reminded us that "knowledge production is best understood as a material social practice shaped by a politics of 'location' in terms of not only geography but also language(s), resources, and global power relations." In relation to Truth's (2012) position, Grosfoguel (2008), Quijano (2000), Jaramillo (2012), and others have spoken about the core of the world system being a coloniality of Eurocentred power/knowledge. This coloniality of power is manifested as "multiple, intersecting, and entangled hierarchies that include language and epistemology" (Jaramillo 2012, 71–72). Smith (1998, 5) puts it this way: "[Modern] academic research facilitates diverse forms of economic and cultural imperialism by shaping and legitimating policies which entrench existing unjust power relations." Colonialism from its beginnings has always been a contest over the mind and the intellect (Truth 2012). The globalization of knowledge and Western culture constantly reaffirms the West's view of itself as the centre of legitimate knowledge, the arbiter of what counts as knowledge, and the source of "civilized" knowledge This form of global knowledge is generally referred to as "universal" knowledge, which is available to all and not really "owned" by anyone. What will count as research knowledge in the world? And who will count as an expert or innovator? (Shiva 2000, vii). These stereotypes are entrenched in human society, and Western thoughts are exalted as the uppercase format for civilization, knowledge, and innovation.

Researchers and scholars who have been long caught in the web of the dominant pattern of discourses will definitely find it very difficult to excel in these fixed structures, assumptions, and values and may not be capable of challenging them (Shiva 2000). Eurocentric science is already a naturalized hegemony and is grounded on the needs of Western society and its perception of the needs of other communities. To continue maintaining life relations, promoting their vision and development agenda for the world will require guarding and surveiling knowledge production (Neilson 2014).

Evidently, much of the discourse on open access, such as the funding models and what have been considered abuses, takes place within the template of the mainstream framework of knowledge production (Beall 2009, 2010, 2013). Open access publishing is therefore not about knowledge that is produced using other than mainstream frameworks; open access publishing must replicate the fixtures in offline publishing. Local and indigenous knowledge, for instance, must be reproduced and validated using mainstream criteria, despite charters

that recognize and recommend. Scholars must master the dominant language of English as the main academic global language, and this capacity must be used as a measure of the "quality" of international scholarship (Lillis and Curry 2015).

Knowledge production outside the mainstream context

Non-mainstream context science could refer to science that occurs in subcultures and countercultures of Eurocentric science, often otherwise considered as generally acceptable and standard science. It is that science that is conducted on, and using, unconventional, or what mainstream science may consider "epistemologically and methodologically" distorted, approaches (Quijano 2000; Haider 2007; Grosfoguel 2008; Hardt 2010; D. Hill 2012). In many climes, this kind of science is considered as fake and is generally supposed to be unacceptable in modern journals and periodicals. In any case, however, non-mainstream science is not synonymous with fake science or fraud; it may consist of alternative useful approaches to solving problems that may not fit within the contours of neo-imperialist hegemonic and subaltern knowledge production labels (Shiva 2000; Truth 2012). Examples of such labels are bad English language, poor peer review, and academic qualifications of authors, among others.

Knowledge is largely a local phenomenon evident in the fact that human needs differ according to local peculiarities (Agrawal 1995; Booth and Skelton 2003; Donovan and Puri 2004; Nwagwu 2006). Even needs that seem regional or international—for instance, malaria in sub-Saharan Africa—display distinctive characteristics in different sub-regions from what is seen in others (Nwagwu 2012). The locality of human knowledge, however, is not reflected in preferred or popular global academic publishing and knowledge circulation practices. For instance, the impact of a journal in clinical medicine—a field that is known to be locally inclined—is measured by metrics that rely on a global denominator, whereas the readership and use of information resources will be stoked by, among others, the size of the target community. Besides, there are local differences in infrastructure, resources, and human capital, and these further compound the differences often noticed and the way in which different communities produce knowledge.

Every surviving human society produces knowledge in one form or other. Based on natural growth and development processes, every human being possesses knowledge, but not every human being may be able to read, write, or create artefacts of the content of their brains in such a way that they can be shared or disseminated using modern approaches. At the same time, irrespective of these skills, people have been able through history to organize their societies and families. Wherever human beings have survived until this day, they have co-existed with knowledge that has guided food and health care selection and choices, government and administration, love and interpersonal relations, among others. The question of the value and usefulness of knowledge sits comfortably in human history, as surviving rubrics of human societies have achieved survival

through the knowledge that is inherent and natural in them (Grosfoguel 2008; Wane, Kempf, and Simmons 2011).

Writing as a technology, and literacy, have made monumental contributions to human development (Ives 2004; Joseph 2011). However, Eurocentric reading, writing, and interpretation will present serious problems to researchers with non-English backgrounds because they may not see themselves in the text they are reading or writing:

> The tremor from the Library of Heaven's Path just now caused his attention to be concentrated in his mind and he was still in a dazed state. Furthermore, he didn't even know what the other person's punching routine was, so how the hell could he guide him. (Ya 2017, n.p.)

People with second-language English capacity often come from communities that are culturally alienated from their writing or ideas (Phillipson 2003; Jha 2016). Furthermore, what happens when the rules and practice of the writer and his or her writing are dictated and dominated by epistemologies that are distanced from the writer's society? Whose problems is the writer expected to solve—problems around him or her or problems alienated from him or her? Problems also arise when people see themselves in their writing but cannot recognize themselves in the representation of their knowledge (Lillis and Curry 2015).

How do researchers working in local and indigenous, and other contexts, for instance, tell their stories given that standard rules that guide the theorization science are mainstream? Research needs to be carried out to examine how much, and what exactly, the Western research lenses see in local and indigenous knowledge research contexts. Borrowing from Fanon (1967), researchers working on and within other than Western contexts are creating new local intellectual literature that reflects their level of understanding and mastery of the Western knowledge system; they are struggling to construct a new intellectual culture that is alien to their being. For example, with particular reference to texts and journals that relate to indigenous people, Grace (1985, 12) has argued in her writing that much of what published resources such as books contain "reinforce the denigration of the values, actions, customs, culture, and identity of indigenous people. They contain information about how good others are, and how bad we are; they tell lies about us." Grace's paper is focused on school text, but her observations are also applicable to academic writing.

Modern academic writing involves the selection of issues to address, arranging one's ideas, observations, and perspectives about the ideas following established systems of thoughts and, finally, presenting the knowledge to an appropriate audience. Academic writing gives priority to presenting information in texts that must be generated through a certain process, thus rendering, for instance, indigenous writers invisible and unimportant, while non-indigenous writers take the text space. Academic writing requires that we often have to think differently from our natural pathways, reinforce and maintain patterns of discourses that can never be considered fitting to the environment of the writer or unbiased to community values. Academic writing therefore becomes very dangerous because we are

compelled to misrepresent and misappropriate ourselves, and we earn accolades for doing so (Thiong'o 1986; Ashcroft, Griffiths, and Tiffin 1989; Smith 1999). They all aver that it is not possible for an imposed knowledge culture to generate literature that is exactly located within the imperial centre. Both in terms of epistemology, content, and business, the writings of those learning to live the imperial life must deviate from the imperial centre.

Another perspective relates to the ability of "native" writers to appropriate the language of the colonizer as the language of the colonized and to write so that it captures the ways in which the colonized actually use the language, their dialects and inflections, and the way they make sense of their lives (Smith 1999, 36). The writings of the colonized will speak to, and reflect, their experiences and challenges in adapting to new culture. Adapted from Smith (1999), the judgment of research papers emanating from the developing world is overwhelmed by a set of standard fixations. One such fixation is the idea that human knowledge is a totalizing discourse. Totality in knowledge could be described as the assumption that there exists the possibility that global knowledge constitutes a coherent and absolute whole and that it is desirable for absolutely all known knowledge to fit into this whole. An example of this observation is knowledge classification systems as well as rules of professional practice and methods that determine and guide what counts as knowledge and what does not count. However, do these modern knowledge classification schemes cater to indigenous knowledge systems in the non-Western world (Mhlongo 2015; Mhlongo and Ngulube 2018)?

A related subject is the idea that global human knowledge is compelled to conform to the idea of universality of human history (Smith 1999), which is based on the assumption that only fundamental characteristics, principles, and values that all human subjects and societies share should count as knowledge of interest to the world. Finally, there is the idea that knowledge is patriarchal. This idea can be presented in this way: people from non-English speaking countries need to work harder and be subject to a remaking of their physical and cognitive capacities in order to be able to attain the stage of personal development in the West and then be able to contribute this knowledge. Otherwise, their research output will not count in the global knowledge stock because it is not significant, having not been produced according to the principles of the West (Kuçuradi 1995).

Poynder (2018) has observed that researchers in the global South are among the most determined advocates for open access. But the major perception of their need for open access appears to relate to their access to high-quality papers from the developed world rather than as researchers who also need to share their own research with the rest of the world, irrespective of the quality. The open access movement should facilitate the full participation of the global academic community in research and scholarship in a manner that is sustained by international collaborative strategies, while not neglecting local needs and conditions. Governments and funders need to understand and consider the global dynamic forces that influence local conditions in the open access policies and initiatives that they promote.

Science power and the mutations in open access: a focus on APCs

Science power describes the competition for monopoly over scientific power (Bourdieu 1975; Guedon 2007). This power is both technical in capacity and social. Who defines what research is and how it should be conducted, interpreted, circulated, and used? Besides modern science, there exist many problem-solving approaches that work and that have sustained societies for centuries—why do they not count as valid human problem-solving strategies? For example, well over 70 per cent of Africans rely on indigenous medicine to meet their health needs (Maluleka 2017)—why does the knowledge of this practice not count as knowledge production? It does not count because it does not conform to the modern cast of knowledge production. Thus, dominant global knowledge is not necessarily the knowledge that works or that is used by people, but, rather, it is that knowledge that conforms to what has been defined as standard (Truth 2012).

Science power accrues from the capacity to deploy social, economic, and other advantages to influence all aspects of the scope and content of formal science. How does science power connect to open access, and how does this connection relate to Africa? The challenges of global mainstreaming and expanding of open access publishing cannot be separated from the fact that the open access movement has turned out to be about globalizing the imperialist knowledge production framework. There is strong evidence that the open access movement is most successful in the West from where the earliest open access declarations—the Budapest Open Access Declaration, the Berlin Open Access Declaration, and the Bethesda Open Access Declaration—emanated (Schöpfel 2017). More than 60 per cent of the repositories in the world are hosted by organizations in North America and Europe (Ezema and Onyancha 2016). On the contrary, open access is growing at a disproportionate rate in Africa, and Xia et al. (2015) suggests that this may be due to poor information and communication technology infrastructures, lower research and development intensity, and cultural dissimilarities. The disparity in growth in comparison with elsewhere is so obvious that Poynder (2018) has suggested creating offline resources, including more focus on print media, community radio stations, and the creation of shared physical infrastructures to address the issue of access to knowledge in the region.

One of the commodities around which the entrepreneurial potentials of the university was based is the research publication, which is also the key element of open access. Research publications constitute very powerful commodities that are related to the capacity of the universities to produce high-volume and high-quality research papers. In return, the universities gain the opportunity to win large volumes of grants, gaining the privilege of preference to address complex and expensive research projects and attracting more international students than other universities. They also have the privileges of collaborating with wealthy non-university partners to commercialize their research outputs from which they earn income. Thus, much of the contention about open access has focused on the question of an efficient funding model.

APCs are a type of science power. APCs can be considered a form of paywall to scholars from Africa. The term “paywall” actually refers to any arrangement that

restricts access to a resource, whether by cost or by conditions of access and use. The difference between APCs and subscription-based access systems is that the burden of cost of access to information has been transferred to scholars, who, on their own side, have lived with a bigger burden of funding and conducting their research (Burchardt 2014; Zhang and Watson 2017). APCs restrict scholars' access to journals because of the cost of access and this is further exacerbated by prestigious journals because they are most likely to be more expensive. If one looks at the Directory of Open Access Journals (DOAJ), as curated lists, it would appear that the low cost of an APC poses no threat to science in Africa, but, on the contrary, the question of an APC is beyond these absolute figures. As of 2019, going by the DOAJ database (11,185 journals), the global average of an APC is less than US $1,000; about 72 per cent of the journals indicate that they do not charge an APC, 94 per cent (of the 1,998 journals that charge an APC) charge US $1,000 and below, while only about 6 per cent charge an APC of US $3,000 or higher. Unfortunately, the so-called predatory journals might be cheaper and, therefore, constitute affordable venues for many scholars to publish (Nwagwu 2015; Nwagwu and Makubela 2017).

APCs could also be viewed from the perspective of protecting a critical national export commodity—namely, the article—and the infrastructure that is used to manage this trade—namely, information technology (Finch 2012). Research publications are huge sources of income in the developed world—for instance, in the Netherlands, Britain, and the United States (Eve and Priego 2017). This is not the case in Africa, where the essence of publishing appears to be strictly defined for academic purposes (Nwagwu 2012, 2015). Why are the emerging key open access policies in Europe in favour of APCs? The possible impact of three broad-reaching open access policies in Europe—namely, Horizon 2020 and Plan S (2018), which aim at full and immediate open access to publications from publicly funded research—are yet to be properly examined (Finch 2012). There is a strong feeling, however, that mandated APCs, which the three policies uphold, will propel performing journals to increase their APC in an attempt to reach the current US $2,000–$2,500 average, which the high-impact open access journals presently charge. Also, scholars in their early careers and scholars in the developing areas as well as those from arts and humanities will continue to be denied fair access to high-impact open access journals due to either their lack of capacity to meet the demands of the high-quality open access journals or their lack of funds to pay for APCs. Furthermore, small disciplines may fritter away; society journals that survive on subscription revenues will die; new and apprentice publishers will wane, while predatory journals will flourish (Nwagwu 2015; Nwagwu and Ojemeni 2015). Poynder (2018) has suggested that these developments would disenfranchise researchers based in the global South in a more fundamental way than the current subscription system does. In an earlier study, Larivière, Haustein, and Mongeon (2015) discussed the emerging oligopoly arising as a result of a digital scholarly publishing model. European funders also fund research in Africa and other developing areas, but their declarations on open access seldom consider the impact of their publishing

policies on African scholars, scholarship and institutions and on the research they fund in these areas.

APCs are, for instance, a sort of author's blinder; the publisher remains in business by managing article processing and then pays tax to host countries and maintains a significant work force while the author remains aloof to the economic yield of his labour. APCs are also a kind of journal impact factor. The journals that charge the highest fees will be those that have the highest impact factors. Many authors have inferred this observation (Bjork 2012; Jimenez and Garza 2017; Johal et al. 2017; Schönfelder 2018).

There is also the issue of the rapid growth of multidimensional businesses around open access and open science/access technologies that carry along with them the development of various forms of expertise and scholarship, and these play significant roles in the academic publishing industry that are worth approximately US $10.5 billion per year (Esposito 2014; Bjork and Shen 2015; Gasparyan et al. 2015; Eriksson and Helgesson 2017). The cost of open science tools, technologies, and services such as academia.edu, altmetric.com, and other analytics tools, open journal systems, and so on must be recognized as taxing to scholars and institutions in the developing areas. There is generally obvious financial and human resource capacity pressure on scholars and their institutions to invest in developing, acquiring, and using e-infrastructures, services, and tools that drive open science, including open data, open source, and open access to publications.

Although Beall (2009, 2010, 2013) and many others consider predatory journals as outright fraud (T. Hill 2015; Hansoti, Langdorf, and Murphy 2016; Gasparyan et al. 2017), several studies suggest that so-called predatory publishing serves new entrants into scholarly publishing, apprentice publishers who are leveraging on the ease and low cost of information technology to engage in the publishing enterprise, scholars who cannot afford the cost of access to mainstream journals, or those whose capacities are generally low (Bohannon 2013; Emery 2013; Bartholomew 2014; Dudley-Marling 2014; Van Noorden 2014; T. Hill 2015; Nwagwu 2015; Hansoti, Langdorf, and Murphy 2016; Balehegn 2017; Habibzadeh and Simundic 2017). Gasparyan et al. 2017 have described the operators of predatory journals as non-mainstream science practitioners because they are seldom common in the developed regions of the world.

Reinforcing counter-hegemony, straightening open access

There exist sufficient literature that call attention to the relevance of knowledge in the periphery, but there is increasing need for critically engaged, proactive, and fertile epistemic reciprocity and unity to tap this knowledge. Engaging in this will require undertaking and affirming counter-hegemonic ways of knowing and working and new understandings as well as knowledge shared through the World Wide Web (Grosfoguel 2008). The globalization of Western research cultures into the global South and lower-income economies constitutes part of the rapid internationalization of scientific research, and whoever has knowledge, and wants to share the knowledge, should be free to do so (Stratford 2012). In

the "Call for Papers" (2016, iv) by *Method(e)s*, a new journal of the Council for the Development of Social Science Research in Africa, it was stated:

> Beyond the dominant epistemological doxa, a large epistemic diversity is brewing under the hegemonic surface, and current cultural and technological measures resulting from the acceleration of exchanges are, paradoxically, encouraging the assertion of epistemic identities from the periphery and thereby exacerbating contradictions in the political realm as well as in the social scientific community.

From a different perspective, but one that is supportive of the foregoing positions, Beck (1996) has observed an emerging shift from a knowledge society where a specific kind of knowledge is preferred and celebrated to a current risk society where there are tensions about what constitutes knowledge, knowledge production, and the purpose of knowledge production, either for its own sake or for economic reasons. Conforming to Ziman's (1994, 2000) thought of the emergence of a post-academic science, the shift observed by Beck (1996) encapsulates knowledge produced outside the core. The silhouette of the framework for knowledge production will therefore be insufficient to provide explanations to the knowledge produced outside the mainstream. Given the fast pace of development in information technologies that drive open access, the pressures to conform to the standard and homogenized set of practices of information production and presentation will continue to pose challenges. But knowledge from the periphery will continue to struggle to sprout (Adejumobi 2017).

In 1964, Cicourel (1964) described the challenges posed by the elegance of theories and the relevance of the theories to understand events in mainstream science. Giddens (1979, 1984) has also introduced the concept of double hermeneutics, which he defines as the "the intersection of two frames of meaning as a logically necessary part of social science, the meaningful social world as constituted by lay actors and the meta-languages invented by social scientists" (Giddens 1984, 374). In his own study, Mayer and Salovey (1993) has called attention to critical issues in formalist, theoretic models and empirical observations in different aspects of human life. Beasley-Murray (2010) observed the emergence of multiple poles of resistance and of alternatives to the dominant scientific discourse active throughout the world, suggesting the emergence of a "post-hegemonic" era. These cautions relate to the subject at hand, particularly in respect of how knowledge produced in Africa in the era of open access continues to be left out of the global reckoning because of the way knowledge is understood, conceptualized, and deployed globally.

Human life, and, in fact, living on earth, thrive when there is continuous progress in our awareness, and in the expansion of our knowledge, about ourselves and about others as well as when our views about others are widened and our values expanded, in turn increasing the opportunity for addressing human challenges. The scientific publishing world has hitherto previously been constrained to highly renowned journals that were almost not substitutable, and open access is already melting stonewalls of the un-substitutable journal syndrome. Researchers in the developing world should be intellectually and

politically obligated to change the unidirectional flow of knowledge and capital from the core to the periphery into an intellectual dialogue that disrupts the hierarchical, core-periphery divide (Kuusela 2018).

The time has come for Africans to rethink attachment to the knowledge production and dissemination approaches that perpetuate their exclusion from global reckoning. A typical example is the journal, a publishing model that emerged in the late 1940s and 1950s in the national aspirations for strategic control and dominance of the fruits of the new scientific knowledge. In this period, African countries, of course, were still colonies, and their research interests—if there were any—were subsumed into those of the dominant powers rather than having any identity of their own. This link with national aspirations embedded a commercial ethos in this supposedly esoteric sphere, entrenched the English language as the language of science, and the English-speaking North Atlantic allies as the leading powers. The journal reinforces the already existing unfair knowledge hierarchy and power divide (Nwagwu and Onyancha 2015), perpetuates tough policing of knowledge flow, and creates collective insecurity and unfair access to knowledge (Strathern 2000; Guédon 2001; Brooks 2005; Chan and Costa 2005; Gray 2008; Houghton and Oppenheim 2010; Chan, Gray, and Kahn 2012; Lorenz 2012).

Why are researchers in Africa unable to detach themselves from the rabbit hole of journals as the authoritative carriers of periodical academic knowledge, given the inability of the journal system to address the knowledge divide. The modern journal system is built upon the expansion, in the wake of the First World War, of research that fed into the national-level coordination of scientific research for strategic and business purposes. Telecommunications, military technology, aeronautics and transport, nuclear physics, and early emerging digital technology had grown and contributed to nationwide big business between the wars, expanded even further during the Second World War, and were key in ensuring the victory of the allies. These intellectual developments had become the focus of considerable debate about research and commercialization and the role of intellectual property in driving big business. They promised not only substantial economic growth in peacetime but also—critically—the enhancement of national and international strategic political and military power and status (Guédon 2001).

Publishing research articles in what is known as high impact peer-reviewed international scholarly journals is of lesser relevance than conducting locally relevant research that deals with socio-economic problems (Tijjsen 2007). There is a fundamental ambivalence in the discourse on the legitimacy of research publications, and this has led to the production of a slippage compelling the practice of mimicry as a resemblance and now as a menace (Bhabha 1984). This development simultaneously discredits and delegitimizes local knowledge and local research performance (Nwagwu 2006). Evidently, mainstream imitations will always pose threats to the local context of knowledge production, and this becomes excessive and uncontrolled and, thereby, unsettles the boundaries and relations of knowledge authority between the mainstream and the local. Referred

to by Bell (2017) as possibly arising due to mimicry, predatory journals could be considered a type of mimicry.

A true open science in Africa can only be achieved if scholars, governments, and policy-makers practically and dispassionately address the decolonization of science (Alperin, Fischman, and Willinsky 2008; Smith 2013; Neilson 2014; Jha 2016). An aspect of the discourse on the decolonization of science is that science under imperialism has resulted in ingrained cultural inertia of knowledge persisting in publishing practices that are difficult to break away from. For example, universities in Africa require that a larger percentage of a scholar's publications appear on non-open access journals, and they also refer papers published by known publishers (Archibong et al. 2010). This deeply entrenched legacy academic cultural bias is also reinforced and perpetuated by the funders whose reward of, and assessment of, authors is usually based on the reputation of the journal in which they publish. It is also a fact that top-ranked publishers and journals have become non-substitutable mini-monopolies in respect of assessing the value that a certain publication carries. This development has created some tension between the goal of open access and the mantra of visibility and career progression.

The meaning of "open" and "access" in open access

Proposals about "open" as a revolution can be linked to the works of Bergson (1935), Audra et al. (1935), and Von Bertalanffy (1960), who have discussed open society generally, but the work of Popper (1945)—namely, *The Open Society and Its Enemies*—is a seminal volume containing political and historical philosophies and identifying and delineating the threat to human freedom in society. What is "open" and what is "access" in open access publishing? Open would ordinarily mean "not closed," "not blocked" or "not secret"; "access" could be taken to mean "means" or "opportunity" of "gaining entrance/entry." These simple dictionary definitions suggest that open access assumes absence of blockage and the existence of the means through which research publications could be made available to people. Openness to research publications has a number of dimensions and can be conceptualized as a spectrum rather than a single defined point, covering resources, artefacts, products, and services (Open Scholarship Initiative 2016). The Open Scholarship Initiative (2016) recommends that the dimensions of openness should include discoverability, accessibility, reusability, and transparency. These elements are very crucial in understanding and promoting open access, but they are connected to advanced information technology applications, some of which are beyond the affordability of scholars in Africa.

Open and access can be considered complex social constructs, reflecting various levels of social, physical, cognitive, and other characteristics of the community. The constructs have implications for client/patron dichotomy; open and access are created and can be controlled/surveilled or even denied. Open access is not a socio-economically neutral concept; it involves some costs and causes changes in human behaviours and society. Besides, the impetus for open access is information technology, a multi-directional, versatile, but culturally induced

and culturally sensitive tool, with varied achievement and outcome potentials in different communities. The pattern of adoption and use and technology-induced innovations will always reflect the political, societal, and scientific structures and cultures and the history of human communities (Nwagwu 2006, 2015).

The concepts of "open" and "access" are facilitated by the Internet, a technology that in itself accentuates inequality (Nwagwu 2006). By its operations, Merton's (1942) ethos of communalism, disinterestedness, and organized scepticism is not only present in open access by design but is also enhanced because open access is driven by digital technologies. The operational standards, tools, and services of open access are a great example of how digital technologies could interfere with the democracy that open access is expected to foster. The key providers of ancillary, but key, services, for instance, such as open journal systems, DOI, ORCID, Publon, Altmetric, Academia.edu, and Researchgate, among others, are all business organizations whose operations mimic in many ways the activities of commercial scholarly publishers. Many of them are subscriptive, or sell software packages and access, and they exclude those who have no capacity to buy or subscribe. Yet many institutions measure visibility and impact of their institutions based on their presence or use of their resources in the services of these organizations.

Open access unarguably is predominantly still in the hands of commercial interests, and products of scientific research are still commercial products that must be packaged in a manner that meets market conditions (Visser and Cordero-Guzmán 2015). Margoni et al. (2016) have engaged on the question of the relationship between open access, open science, and society, and they suggest that, beyond the expectation of influence on scientific and social institutions, attention should be paid to an open paradigm that offers the normative principles required to guide the rules and regulations in open access.

On knowledge production and open access in Africa

African and other researchers endeavour to write their experiences, but they do so under imperialist ways of rendering knowledge (Mamdani 1999; Zeleza and Olukoshi 2004; Arowosegbe 2016). In the works of Thiong'o (1986) and many others, it is postulated that literary thinking is rooted in the imaginative worlds of indigenous peoples and that many of these nations had their histories and development broken and retold by European imperialism. Through their writings, researchers in Africa have had to engage, challenge, and understand their shared history, sociology, and political issues about imperialism and colonialism as that of huge devastation that impedes the survival of the people.

In their engagement on access to knowledge in Africa, African social science researchers prioritize access to the knowledge produced in Africa and by African scholars, owing to a number of issues associated with colonialism for which African knowledge and systems are not the key factor in an African development agenda (Mkandawire and Olukoshi 1999). Since 1973, the Council for the Development of Social Science Research in Africa (CODESRIA) has been committed to promoting and defending the principle of independent thought and

the academic freedom of researchers in the production and dissemination of knowledge throughout the continent. It also commits to strengthening the institutional basis of knowledge production in Africa by proactively engaging and supporting other research institutions and their networks of scholars within its programs of activities, which is considered a critical activity.

A synthesis from CODESRIA's perspectives (Nwagwu 2018) suggests that the principal focus of CODESRIA's support to research in Africa include:

- supporting independent and audacious African reflections on the challenges in the contemporary world;
- interrogating outsider narratives about the academic and public spheres in Africa; and
- eradicating knowledge hierarchies that intersect and reinforce historical class stereotypes.

The council also demands that:

- every high quality journal is both local and international at the same time; the difference is the space served at any given time and
- global knowledge stock should consist of research evidence from all over the world, irrespective of the locality or otherwise of their research focus and other considerations (Nwagwu 2018).

These perspectives indicate a strong expression of commitment not only to promote research production in the region but also to address the issues of knowledge imbalance arising from the skew in the knowledge production framework.

Relatively early in the life of CODESRIA, and early in the global expansion of electronic technologies' applications to drive information production, the council had envisioned the benefits of using the Internet to share African social science research information. According to Ndongo (1997):

> The main objective of CODESRIA using the internet should not only be tapping information but should also be content creation. The rich scientific and technical information from CODESRIA should be made available in the internet. (8)

N'dongo further states that the council envisaged that the Internet would enhance the visibility of African research at the international level, encourage African researchers to exchange experiences and ideas for collaboration, disseminate information within and outside of Africa, and facilitate access to sources of information. Internet-supported online libraries, the digitization of information resources and making them available through the Internet, interlibrary networking, and linkage with information networks were critical aspects of CODESRIA's project to expand access to information produced in Africa (Ndongo 1997).

African and Africanist scholars in the social sciences can be said to have embraced the idea and principle of open access publishing long before open access was formally declared. Before 2002, CODESRIA had seen the Internet as a veritable strategy to introduce uncommon solutions to modern challenges such as unlocking

the wealth of knowledge in Africa to the world in 2002. The council had actively encouraged cooperation and collaboration among African universities, research organizations, and other training institutions. It is a strong position of the council that the struggle to define and envision the role of knowledge production in Africa's transformation process will benefit from the emerging open science practices, and the opportunities they present can be considered veritable opportunities for African researchers to redefine the place of Africa in the modern world. Open access promotes access to more and knowing more, on time, rapidly, and on a wider scale, and this facilitates right and focused researching and problem solving.

Open access can be considered somewhat a higher order modern knowledge management model; the struggle of African scholars to pay homage to imperialism by writing in imperialist language has never been more exposed than now. In the same way, engaging in an anti-imperialist struggle through writing in African languages has evidently suffered tremendously. Language and culture are intertwined in an inalienable manner, and it can become the means of the colonization of the mental universe or the means for strengthening and amplifying voices and diversity.

However, the pattern of open access adoption in Africa somehow mimics the information technology divide. Senior scholars and university administrators prefer the closed access journals, while the younger scholars and students would prefer open access sources. There is strong policy-maker apathy towards open access—open access publications have lighter weight in research assessment than closed access papers. Yet staff and students from the institutions have low access to closed access journals, and evidence abounds that suggests the heavy use of open access sources (Nwagwu 2015). Open access has gone through a series of reformulation since its birth in 2002, and the emerging forms do not benefit Africa. Although dynamism is a natural part of most social phenomena, open access has confronted serious reformulations to the extent that the direction of the movement has become unclear. *Open Divide? Critical Studies on Open Access* is the title of a recent anthology edited by Schöpfel and Herb (2018). Babbini (2014) describes the issues that accentuate the divide as enclosures, while Czerniewicz (2013) has asserted that the inequitable power dynamics of global knowledge production and exchange are responsible and must be confronted head on.

At the regional, national, and scholarly community and institutional levels, there is no organized effort to push for open access in Africa or to push against paywalls or any of the enclosure variables. There is no regional policy, and national policies are few and promote an APC model. Furthermore, the strength and readiness of the universities to control and regulate publishing of research is also becoming ever stronger in the developed world and Latin America, while the universities in Africa are yet to invent the capacity to manage publishing and research publications. At best, the global open access movement can be considered a tragicomedy. By blending both tragic and comic forms in the present form of the movement, the original and primary essence of open access appears defeated. What really emerges fits into what De los Arcos and Weller (2018) have described as "a tale of two globes." Access to knowledge from the West has grown tremendously, but not so with access of the West to the knowledge produced in Africa.

Engaging the discontinuities: Making open access work in Africa

The key questions also include how we should organize global publishing such that researchers seeking, or working within, other than mainstream contexts and capacities are not framed as being either criminal or fake and that they are also judged on local criteria. Evidently, researchers working within other contexts have a mastery of local dynamics that might require considerable skill, sensitivity, maturity, knowledge, and experience, even though their research outcomes might not satisfy the mantra of totalizing discourse about knowledge. Let us address these questions by engaging the discontinuities. Open access, like any other development agenda on Africa, cannot benefit knowledge development and enterprise in the region if it is moored on a Western knowledge production framework. Africans must view, define, and undertake open access purely from an African research and development context and perspective. This opinion tallies neatly with that of Ake (1979) in his creative and critical engagement with one of the most pernicious and most subtle forms of imperialism—imperialism in the guise of scientific knowledge—and establishes its practical significance for development (Arowosegbe 2014, 7).

A cosmopolitan perspective about open access that creates further enclosures will not suffice in creating global participation. This trajectory of opinion dominated CODESRIA's agenda on open access publishing during its first international conference on open access in Africa (Nwagwu and Nwosu 2016). Open access in Africa must move from Western knowledge production templates to addressing Afro-sensitive open access models. Deferring to the level of human and technological development and availability, open access in Africa must consider the political economy of knowledge, the imperialist overtones and advantages in the current deployment of open access and its technologies, as well as the need to use open access to create access to high-quality African indigenous knowledge produced in local contexts and circumstances. This opinion connects to Arowosegbe's (2014) analysis of Ake's (1979) work:

> The major issue, which Ake engages in this regard, is the question of how knowledge as appropriated and developed by Africans on the basis of their historical experiences can be valorized for empowering the state in the pursuit of democracy and development. (Arowosegbe 2014)

There exist national policies on open access in many countries in Africa, but there is a need for an overarching voice from continental and sub-regional bodies such as the African Union, the Economic Community of West African States, and so on, similar to what occurs in the developed world. This kind of attention is required to coordinate open access research and activities and define continental goals to further support the expansion and sustenance of any gains that have been achieved so far. Issues about open access in regard to knowledge in Africa, including policies, strategies, quality assessment criteria, among others, should be home based, considering local conditions in which researchers work. We must recognize that the open access situation in the larger global publishing system differs from open access in the local environments of Africa—for instance, there appears to be no serious property rights prescription by scholars in Africa

compared to what exists in the North where there are somewhat more structured property arrangements. African researchers should curate open access journals in Africa themselves, considering home-defined criteria such as language and other resource constraints. In this way, we should be able to identify journals that are omitted in mainstream databases on account of restrictive criteria that are used to class journals as predatory.

Conclusive remarks

The persistence of global human and societal challenges such as health, politics, terrorism, governance, and others suggest that the limitations of the Western knowledge systems and potential adumbrations have also contributed in making the world less a better place than would have been expected. The focus on open access should be on how to leverage information technology applications in knowledge publishing to achieve a truly global system of knowledge exchange and not how to rebirth old trajectories and institutions of knowledge hegemony. The attention should be on how to achieve full democracy and participation in global problem solving. All of the dichotomies of local, international, mainstream, off-stream journals, among others, are evidence of the persisting command and control characteristics of Western hegemony.

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