

Rethinking Technology Design and Deployment in Africa: Lessons from an African Standpoint

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ABSTRACT

Research in HCI4D has emphasized the need for a critical analysis of how conventional design paradigms and analytical orientations work in non-western contexts. This necessitates an examination of how indigenous modes of knowing could inform the framing and making of technological innovation in Africa. This paper draws on four empirical cases to show how stereotypical (often colonial and neo-colonial) design paradigms might have hastily misrepresented the situated practices of designing and deploying educational technologies in Nigeria. The paper argues that a situated standpoint orientation provides a way of approaching and analysing the plurality of the African context – which in essence relies on indigenous practices and knowledge in designing operational interventions that can be adopted and used to support teaching and learning. Thus, the temporal analysis of the four cases points to the material implications of the interactivity between culture and locale in extending indigenous practices of design.

CCS CONCEPTS

• **Human-centred computing** → Human computer interaction (HCI); Empirical studies in HCI.

KEYWORDS

African Standpoint, Design, Development, Deployment, Situated Approach

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1 INTRODUCTION

This paper focuses on questioning and rethinking of conventional orientations informing the framing and analysis of technology design and deployment in Africa. By questioning stereotypical approaches to design knowing in Africa, the paper attempts to show how the adoption of situated approaches to understanding and translating indigenous knowledge in technology design can

allow the development of relational ways of deconstructing African design – both as a cultural object and as an emerging practice [10, 16, 17]. In reconsidering the common thinking informing design innovation from an African standpoint [6, 41], this paper seeks to show how modernist (i.e., neo-colonial) discourses in Human-Computer Interaction for Development (HCI4D) might have continued the marginalization of indigenous ways of being in transnational spaces, which need to be decolonized within the framing of technology design and deployment [4, 9, 15, 46]. Here, ‘design’ is not loosely considered as an approach for creating (or fabricating) an artefact, but more of a cultural practice of knowing how to think about and make new features of the social world.

While research in HCI has emphasized the importance of understanding the nuances of lived experiences in design thinking, current frames of staging and analyzing the design and deployment of learning technologies might not accommodate the spirit of indigenizing and decolonizing education in Africa. Recent efforts in HCI4D have demonstrated the importance of socio-cultural, political, material politico-ontological alternatives in framing the design of technologies [29, 30, 43, 55]. However, it appears that there are unanswered questions of whether postcolonial (or neo-colonial) paradigms are essential in adequately interpreting and representing African plural culture of design? [2, 6]. Or whether neo-colonial tactics are needed in pushing the boundaries enacted by colonial conditions of design knowing? Another pertinent issue is that neo-coloniality has been perpetuated in every aspect of social life in most ‘third world countries’ without the exercise of direct power, largely through interfering (and intervening) in the socio-political evolution of such societies. The issue here is mainly about how the interference and intervention are grand designs that are embedded within a specific culture, mostly Western. The implication of such questions is that of whether the adoption of discursive structures that have presented the African imaginaries as ‘primitive’ are necessary (and applicable) for the emancipation of African identities? Such questions have begun to resurface in African HCI discourses, and they are receiving considerable attention because conventional design practice embodies imperialistic logic that considers certain perspective more important than others [30, 55]. The emphasis here concerns how localized conditions, situated cultures, and emerging practices of design demand a paradigm shift in African HCI. This is an issue that is scantily addressed [10, 16, 42, 47], and this paper purposes to address it.

Relatedly, the paper argues that most of the underlying design assumptions that have continuously informed the discourse of HCI from Africa do not consider the ‘trinitities of African cultures’ in most communities, which might thus be considered as disempowering of local perspectives. As most of the paradigms, methodologies

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and design lenses informing the processes and activities of technology design in HCI4D are Eurocentric, it introduces the subtle requirement for identifying how the collectives of situated epistemologies can reorient African design practices across multiple locales and cultures¹. The situated orientation the paper draws from is not considered as a new postcolonial or decolonial paradigm in computing, nor a ‘standardized cultural package’ for African design [22]. Instead, it is an ‘outlook’ that is critical of the current paradigms and cultural lenses in HCI4D. This is developed on the preconception that what was widely regarded as the ‘postcolonial’ [29] does not denote an ‘aftermath’ of the marginalisation of indigenous perspectives in the manifestation of design work, but a ‘next’ cultural practice of disempowering indigenous relations through charismatic conditioning of the politics of design [23].

The consideration of the alternative as ‘indigenous’ and ‘African’ is developed on the premise of shared inspiration for epistemic emancipation and political transformation in African communities [2]. In practice, the situated approach was considered as a spatial typology when thinking about the possibilities of designing and deploying educational technologies that can be adopted and used effectively by a range of stakeholders in Nigerian universities. It was not considered as an ad-hoc alternative to design knowing. Nonetheless, it is framed as a shared abstraction between social and technological issues, which is integral to understanding the trinities of social practices of most African communities. In essence, the central focus of this paper is to show how the situated orientation can provide mapping instruments for deconstructing design innovation in Africa [40], specifically in the context of Nigeria’s software industry. This is relevant to recent efforts towards the development of an African approach to HCI [2, 15], and indigenous approaches to HCI research more generally [17, 32].

In the remainder of the paper, the background for grounding the ideas of designing and deploying educational technologies from the lenses of situated imaginaries and knowledge is provided [50]. The emphasis was on what the situated approach can offer to the deconstruction of existing binaries about the cultures of design innovation and the design of plural cultures of education. Using four empirical cases that exemplify the postcolonial (as the next colonial) framings of technology design and deployment by a set of practitioners in Nigeria, the paper attempt showing how subtle dependencies on Western tactics of intervention might have endangered the possibilities of supporting, extending and preserving indigenous knowledge. The paper ends by outlining the possibilities that the insistence on defamiliarization how HCI approaches Africa concerns – or supposedly the way African(s) and those interested in African HCI do approach local perspectives – can offer vocabularies for the actualisation of a relational and an ontological framing of design in HCI4D.

2 BACKGROUND

2.1 Technology Design and Development Practices in Africa

Research has established that the current design paradigms in HCI are embedded in Western epistemological and methodological traditions that are biased at best and racist at worst [1, 4, 6]. This has led to the reconciling of the models used for interpreting and translating the characterization of lived experiences and perspectives in marginalized communities [53]. Also, research on indigenous HCI has continued to show how the framing of design work through dominant ideals undermine, as well as misrepresent indigenous practices of knowledge production [17, 32]. This has brought about the consideration of how alternative perspectives, for example, Afrocentrism, Ubuntu, Indigenization and Africanisation, can bring about developing relational paradigms for guiding the processes and activities of designing interactive technologies [10, 30, 31, 55]. Such a critical shift in African design has brought about the need to formulate and explore new set of questions about design innovation (ontological and epistemological), introducing the requirement for examining how indigenous knowledge can be absorbed and enacted in emerging approaches of design, and that of HCI (e.g., [44, 56, 58]).

A practical example of such efforts is the analysis of the manifestation of neo-colonial assumptions in the One Child per Laptop Project, which provided tactics for disrupting the practice of education and design in postcolonial timing [7, 43]. As such, the paper identified with similar efforts that situate design problems in the locale of communities [24, 33] whilst working with the complexities of diverse experiences [16, 41] and ensuring that the ‘knowing’ influencing design is not pre-determined rather a natural evolution within the context of making. Such a way of thinking has led to the consideration of how the design of localized educational technologies might support diverse educational requirements while also fostering adoption and acceptance [48, 49, 51, 52]. The adoption of an indigenous standpoint approach to understanding the situated nature of education and design supports such efforts. Consequently, temporal cases from Nigeria are used to exemplify how practicing situated imaginaries and knowledge practice might better inform the African culture of design.

However, with the entanglement created by the interaction between indigenous practices of knowledge and dominant principles of design, there remains the question of how to attest for the interactivity that often goes unattended in the transnational discourses that form the basis for the development of design paradigm in HCI4D. Such a question might present the more prominent political alternatives to knowledge production in Africa as mimicking imperialistic discursive practices, which can be considered incompatible with the inert design culture in Africa. For instance, such a resemblance could present the ‘Negritude’ [37], ‘Afrocentrism’ [8], and the ‘Postcolony’ [35] political project as ‘minimally eccentric’ movements that are embedded in ethnocentric canons of ‘othering’ situated alternatives, thus creating a superficial sense of moving towards the pluriverse. Alternatively, decoloniality came about as an option for rattling dominant paradigms and relationally decoding the materiality of power in knowledge production [36]. As it stands, decoloniality is not a paradigm, nor entirely a new canon,

¹African design is considered as a cultural means of engaging with the multiplicity of the world, its objects, its subjects, its framing, and its meanings.

but widely considered as methodology-in-as-pedagogy for developing alternative relations of the geo-body politics of knowledge [4, 39]. Within the framing of the paper, decoloniality is considered as a political avenue for engaging with coloniality and postcoloniality in the collective struggle to undo polarized dualities and dichotomies. Regardless of the implications of decoloniality within the broader context of HCI literature, there remains the question of how critical and reflexive epistemic perspectives gets enacted and expressed in new approaches to design in HCI4D, and African HCI more specifically?

Consequently, this paper considers how the adoption of the collectives of situated imaginaries and knowledge practices can provide a shared vocabulary for understanding the plurality of teaching/learning culture when the goals of education are not apparent or made visible. This is pertinent with recent efforts that have situated design practices in the locale of communities and within diverse perspectives and experiences [44]. This is important as it provides an ordering vehicle for engaging with the intersectional ‘culture of design’ and plural ‘practice of design’ in African culture [22], which when examined within trends of designing for/from the margin [25, 26] might make clear the implications of viewing and approaching design as largely ontolo-political rather than historical and socio-technical.

2.2 Situated Standpoints in African HCI

In HCI4D, the ideas of an African standpoint concern the possibilities for developing a set of sensitivities for analysing and presenting multiple experiences in the transnational and translocal context of design [2]. The situated orientation is a spatial vehicle for understanding and reporting the plurality of traditions and languages in African communities. It draws on the conceptual ideas of Peter Winch concerning the possibilities and impossibilities of understanding other communities, their situated imaginaries, their traditional socialities, and their cultural values from one’s situated standpoint [54]. The orientation also resonates with Feminist standpoint theory which developed partly to challenge and rectify common (and sexist) assumptions about the nature of the social world. Feminist discourse has brought about a paradigm shift in scientific and social science discourse, which include the insistence on the need for a critical-reflexive analysis of the implication of positionality and power in knowledge production and consumption.

Regardless of Feminist critique of dominant assumption about power-knowledge, standpoint theory has stimulated a range of controversies in the sciences, whereas its contradicting narratives has led to its theorization as a travelling theory [20, 28, 38, 59] – and one attribute that the paper methodologically identifies. Regardless of its travelling conversations, its structural controversies have extended to the African context, in that the debates about the political implication of the traditions of ‘African Feminism’ [34]/ ‘Feminism in Africa’ [45] might have limited the possibilities of developing plural approaches for responding to the struggle of the transatlantic – i.e., the crisis of genre. While this paper is not entirely grounded in the traditions of Feminist HCI as moved by Bardzell [11], it recognises its critical framing of the ‘geopolitics of knowledge’ and ‘culture of pluralism’ in HCI’s design practices [19]. The paper also commits to its practice of insistence on the multiplicity of social relations in community-based and participatory-based

interactive design. Within the context of African HCI, the situated orientations differ from existing alternative to designing for the pluriverse as it relies on the travelling strategies afforded through the questioning of dominant modes of design thinking in HCI4D, HCI more generally.

Note that ‘standpoint’ theorization does not always offer political and material resources for epistemic privileging and elevation. However, it emphasises the importance of having a situated positionality, either in sharing relations or in having a unitary view of reorienting knowledge practices [50, 59]. The question, then, would be how the rethinking of the practices of technology design and deployment from Africa might support and extend the Feminist agenda of defamiliarizing and deconstructing universalized knowledge assumptions? How would an indigenous standpoint positionality bring about collective responsiveness to emerging design challenges and learnings of the pluriverse? [27]. How can individuals and communities in Africa recognize and adopt the standpoint of designing by, for, and with themselves? [19]. How can the cultural practices of indigenous design be translocally constituted and translated across existing taxonomies? Answering these questions might provide a set of possibilities for preserving local means and end for design futuring of African communities – and this is the thesis that the project informing this analysis seeks to address.

2.3 Alternative Cultural Lenses in African HCI

A range of cultural lenses have informed the analysis and translation of culture in the design and development of technological innovations. Partly due to unequal relations of power in transnational design spaces, some authors have argued that cross-cultural, intercultural, multicultural, and even transcultural approaches [25, 29, 53, 57] to community technology design do not provide equitable modes of cultural engagement and translation [2]. In response, this paper suggests viewing the practice of community design through a ‘transatlantic’ lens to focus attention on the ‘interactivity’ between culture and locale. It is presumed that focusing attention on the integrative aspect of practice across already polarised spaces might open up possibilities for the continual creation and translation of design futuring ways that extend the ethics of pluralism (which has been a lasting concern to Feminist HCI). As culture is widely considered and expressed as an analytical practice of categorizing how a collection of approaches inform design practices, design features ought to be identified in relation to the structures of the social or institutional life of design as well as deployment. This is related to Escobar’s plural conceptualisation of the impetus of worldly things in design [27], which when considered within the framing of designing for multiple educational cultures and deployment contexts might show the complexities of design as a cultural practice. The assumption is that approaching community engagement from a ‘transatlantic’ outlook might provide a shared vernacular for comprehending the composition of the African personality, either in its singular instance or through its community manifestation. This means that the translation of culture across polarised communities enacts and perform semantically, placing the ‘in here’ and the ‘out there’ in continual interaction and thus move towards an equitable approach to design that extends and preserve indigenous knowledge.

3 EMPIRICAL CASE – CONTEXT, METHODS AND DATA

The context for this paper's argument lies in theoretical and empirical research into the design and deployment of technology as a means for disrupting the relations between technology, education and development. The theoretical foundation of the research lies in some recent work into the epistemological orientations, methodological sensitivities and analytical pedagogies adopted in understanding and designing for African futuring problems – i.e., the wicked problems of the imagination. The empirical aspect of the research lies in qualitative data collected from two HCI4D field studies carried out in Nigeria. Nigeria is the most populous nation in Africa and widely considered as the powerhouse of Africa. Unfortunately, Nigeria is also the poverty capital of the world – making it an ideal case for widening or narrowing the misconception of technological innovation in Africa. The field studies were carried out in three universities and three technology development companies that provide educational solutions and services to a range of stakeholders in the education sector.

During the period of June/July 2018 and May 2019, I engaged students, lecturers, educational manager's, and software designers/developers to research the mundane practices of designing, developing and using eLearning systems. Two of the universities are among the first-generation public universities in Nigeria, one in the South West (University A) and the other in North Central (University B); while the other is a private university in the capital city of Abuja (University C). The cases draw from interviews, focus groups and rapid ethnographic data. From the initial fieldwork, the data consisted of five focus group discussion with twenty-nine students, fourteen interviews with lectures, three interviews with university managers, and seven interviews with designers and developers of eLearning systems. The follow-up fieldwork involved a rapid ethnographic study carried out in University B and C, and one of the software companies (referred to as Edusoft). During the ethnographic study, I observed what might be considered as the ordinary working practice of students and lecturers in Nigerian universities. I observed the activities of two students and two lecturers from each of University B and C. During one week, I engaged six participants in Edusoft where I casually engaged in observations, made conversation where possible, attended team meeting and took notes and photographs of how their work is organised and accomplished through the agile framework. For analysis, a largely grounded approach to thematic analysis was adopted.

While the paper does not claim to provide a thick description of the mundane practices of the different stakeholders involved in the study, it attempted to point to specific instances whereby the analytical ideas of a situated standpoint can provide a way of looking at the complexities of pedagogies in higher education and the fragile culture(s) of software development in Nigeria. In particular, attention is focused on the interactivity between pedagogical practices of teaching/learning (culture) and the agility practice of software work (locale or context). I was particularly interested in articulating how a range of socio-cultural, material, organisational and contextual issues get absorbed and translated in software practitioner's everyday practice of work.

Besides, the data that make the case are considered anecdotally to demonstrate how a collection of possibilities can draw attention to how technology design is not about how artefacts are created but how ontological practices of education and design are constituted and encountered. One might wonder whether the examples provided to make the case adequately represent the bigger picture of the Nigerian context in terms of the hybridity of educational practices and the agility of design culture. The temporal cases are presented as instances where conventional design practices prove difficult in adequately attending to the situated and transient relations of designing by/with the pluriverse. Although the four cases can be considered selective, the analytical sensitivity adopted provides an abstract but informed understanding of the social settings investigated.

4 TEMPORAL CASES

This section examines four temporal cases that came out of the analysis of the data using the ideas of a situated standpoint to indigenise design practice of software designers/developers as much as decolonize the cultural practices of higher education. Indigenization is considered within the framing of [10], and largely as a knowledge practice that is derived from the interactivity between people in multiple locales. Supposedly, how indigenous knowledge is produced, shared, and preserved in the pedagogical practice of teaching and learning might offer possibilities for interrogating dominant assumption of educational technologies, and thus might lead to the decolonisation of higher education in Nigeria. The orientation argues that a closer examination of the practice of education through the nuance structures of social and institutional life in African communities might provide a better understanding of how African culture of design ought to be largely ontolo-political. The cases are considered temporal mainly due to the understanding that the practices of education and design get expressed and understood differently over time.

4.1 Reframing Cultural and Contextual Differences

“Take M-pesa for example, because it works in Kenya, everybody assumes that it will work here. There was a culture in Kenya which makes it work, there was a gap. Here too, banks attempt to fit into those gaps. Some argued that due to some environmental limitation, we can build SMS based systems. When you think of it, what of user experience” (Software Project Manager).

The excerpt above reflects the empathy and frustration of a project manager concerning the harmful assumptions (and expectations from them) in their everyday work of designing and deploying services that respond to the demand of the Nigerian educational and software industry. The emphasises made regarding the popular mobile-based banking service M-pesa is that of the issues of culture and context. The project manager's account might suggest how culture is interchanged with context and vice versa. This is mainly because practitioners have identified how culture and context shape the culture of design and cultural practice of design, but also how they can act as an analytical instrument for staging work processes and activities. Culture is largely seen as a mechanism for

staging design features in relation to pedagogical approaches or social structures of the context of deployment. Whereas context can either be the site of production, interactivity or deployment. It seems likely that the organisation of work in both sites of production and deployment might determine the functioning of cultures in the reasoning of practitioners. This suggests that the project manager was referring to how a set of financial conditions embedded in cultural practices of Kenya might have played out in the success of M-pesa, which when imported (and appropriated) to the Nigerian context might not reflect the underlying financial structure in the wider community. While some might argue that there might not be significant differences between the mobile banking culture in most Africa countries, the manager was making a clear distinction between a cultural attribute or contextual conditions that might have warranted the success of M-pesa, which when blindly appropriated in Nigeria might not bring about the same level of adoption and successful acceptance by the general public. This shows the taxonomies of culture and context, how they are easily interchanged, and how they get enacted and perfumed for or against the other in design spaces.

Consequently, the literature in HCI has provided a varied interpretation of culture and context in design space – either as a practice, a perspective, a social system or a politics [18, 21, 40, 47]. From a generative view of culture, Dourish suggests that the notion of context is a ‘slippery’ and ‘meaningful’ practice of action that takes the form of representing everyday mundane work and not some idealized account of work [21]. The focus is on how past events inform present ones and not how the present ones might inform future actions. The ideas behind context were mainly of how design can be sensitive to a particular social setting, while culture is cultivated and understood within a context. Context provides an overview of how the setting’s culture is developed and can be used in design work. This might suggest that the design and deployment of technology within an organization might take the form of seeing activities/processes to be undertaken to be partly due to a specific cultural outlook whereas the organization is the context within which these activities/processes are undertaken. Put differently, it is about identifying the influence and impact of context to one’s cultural practice of design, and how such practices are embedded in a particular organizational culture. What this might suggest is that culture cannot be understood outside the context within which it is enacted and understood, and context exists and operate in a particular organization or community.

However, the major issue faced by software practitioner is how multiple cultures are to be articulated and translated into the practice of designing technologies when the pedagogical practices of education are not apparent or made visible. Research from Nigeria has established how the social structures of the context practitioners work determines (or might even undermine) their cultural practices of design [3, 40]. However, there appear to be no clear indexes as to how the mundane practices of practitioners are influenced (or lack thereof) by HCI design practices and vice versa. What stands out from the everyday work of Edusoft is that software engineering methodologies and procedures, by definition, are considered to be of greater importance to the organisational context of their work than HCI methods or practices. This can be partly attributed to the lack of awareness as to how HCI design practices are operational

translocally. With the differences in the contextual cultures of different communities in Nigeria, reframing the difference between culture and context might reveal how they get translated within a particular social structure of use. The unification of culture to be community bound or nation distributed has proven to be more problematic than anticipated as one could not fully articulate where one culture ends, and another starts. Even attempting to write off porous cultural boundaries enacted by transnational conditions of engagement might denote a power relation that can either privilege or subordinate certain conditions over others. Instead, the situated approaches espouse examining how cultures flow across contested boundaries. Equally, it examines how the integrative and residual components of culture interact and get re-distributed within a particular context, which could in turn outline how it is presented and represented through its travel across multiple contexts.

4.2 Appropriating Uneven Concerns and Realities

The case above warrants analysing how context and culture are interchanged and renegotiated in translocal spaces where there are unequal relations of power. As it appears, the complexities and slipperiness of articulating a community of practice in the transnational spaces of design might be partly due to the differences in the inspirations of actor that inform the thinking of design and practices of design making. The excerpt below denotes a common challenge faced by practitioners when the actors that influence their reasoning and decision-making have significantly different concerns (cultural perspectives) and realities (cultural experiences). In their collective words:

“We aim to offer British standard education in Nigeria at half the amount to be spent studying in the UK. Having that control, with a click, you wouldn’t have to do much to have access to resources. It is the assumption that the quality of British educational system can be vested on how they leverage on technology, the technology here been a Key factor for adoption to streamline our operations, reduce cost, to improve transparency, and to speed up operational processes” (University Manager).

“The kind of students sent to our universities aren’t that prepared for the ideal level they are supposed to start here. It’s a kind of like we are building a castle in the air. We don’t use the learning management system fully, it’s a form of a blended approach. The blend is basically to reduce the burden on us” (Lecturer).

As it stands, actors have different assumptions about how educational technologies can further support their work culture. The educational manager might be more concern with computation and productivity that adopting eLearning systems can bring to their current processes. The lecturer on the other end is more concern with the broader preparedness of learners to the proposed use of technology via the blended approach. This has implications to the situated practices of practitioners in that it shapes the judgements they can make about the approaches to adopt in attending to plural concerns and realities. The difficulty here is of how to make meaning of their varied perspectives/experiences as one begins to engage in the processes of deciding the sensitivities (as in design methods

and project management methodology) to adopt as new conditions emerge. The lack of a unified language for bringing together multiple relations might be partly due to the unwarranted assumption on the part of the general community that software development is like plug and play. The unspoken assumption on the part of software practitioners is that users will ultimately adopt and adapt technologies that might not have been designed with/for them. Both educational managers and lecturers might not have admitted that there is a clear distinction between the use of technology for quantification purpose and when used for reflexive rote learning. The situated alternative calls into question those unacknowledged and unspoken assumptions.

In essence, what it might offer to practitioners is a set of effective-ineffective possibilities for intelligible making sense and meaning of the relationship between different actors (their collective imaginaries of the implication of technology to their work), moving with such knowledge as to make an informed judgement about the design method to adopt and that which to adapt to as new conditions of work emerge. How then can practitioners approach the similitude and difference in perspective and translate them into the pool of design reasoning? It is suggested that focusing on the compositional aspect of Nigeria social and political system of organization – as a contested, emerging and relational network of particularly important ‘things’ – can offer ways of attending to/responding to the diverse conditions. This might suggest that the complexities of knowing with/for/by the collective is a mode of reasoning that is not predetermined, yet culturally and contextually emerging.

4.3 Interpreting and Translating Local Meanings to Design

“We put ourselves in the shoes of the users and think for them. The thinking is basically about what should be there. We don’t really go out and talk to users of the application per se. What we usually do is gather requirements, do wireframing, conduct user flow evaluation and testing, design high fidelity mockups – visual designing of wireframes and how users flow from one screen to the other, develop content prototypes which feel like actual application, and collect feedback from selected user group. We are building for the users, and we believe that without the users, there is no product” (System Designer)

“Or maybe it’s a two-way thing to make it clear. If you are developing a product, you can go out and talk to people and gather some information from them or you can put yourself in the shoes of the user as no person is paying for it. But when someone is paying for such a product, they are actually the person that gives you the requirement” (Software Developer)

“So, if we are going to use such learning technologies and get the best out of them, my emphasis would be on orientation. . . . It is only when they have the know-how that they will start to gain the advantages and thus stimulate their learning. If you don’t have any idea what the eLearning system can do and the benefit, you

can’t patronize it. The awareness issue should be taken into consideration seriously” (Student)

The first two excerpts above demonstrate how system requirements and specifications are translated into design actions. At best, this is ‘designerly way of knowing’ and at worst an exhibition of ‘speculative realism’ – considering users perspectives as residual objects that can be easily conveyed through the artistic imaginaries of the designer. The way of knowing or the frame of design thinking is that practitioners mostly adopt common and unproblematic forms of design reasoning and actions. It becomes justifiable for many to assume that designerly ways of knowing are no different from userly ways of thinking and that such ideas of designer reasoning are typical forms of user thinking, regardless of individual positionality and identity. Such an account corresponds with [7] reflection on the nostalgic ideologies that shape the One Child per Laptop Project, where ‘precocious’ developers assume that the users designed for (and not with or by) have similar university experiences as them. Or largely have common pedagogical needs and concerns that can be juxtaposed under a unitary approach to design thinking. This represents the unintended biases associated with dominant cultures of design thinking, where design imaginaries recognises or alienate the inspirations of peoples, and where an equitable design approach ought to form basis for designing the pluriverse – similar to those reported by [49, 52]. The excerpt from the student reflects an entirely different perspective that one could imagine of someone that went to a Nigerian university, either public or private. With the culture of thinking for and not thinking with/by the collective, a relational way of knowing and thinking for plural conditions ought to take precedence over nostalgic one’s.

In addition, from the analysis of the perspective of software practitioners, there seems to be the lack of a shared language for interpreting and translating the situated meanings of ‘things’ in design processes. This warrants an examination of how practitioners can get design techniques into their situated problem or how design methods are made (or can be made) to react to the specificity of conditions as they emerge. Within the framing of the situated approach to African design, these do-able problems are approached and resolved when framing the problem of design and not as an added ad-hoc problem, which adds some localize attribute to them. This way, the presentations (and subsequent representations) of diverse experiences are negotiated and distributed in design thinking or the end product of design. The complex power relations between the ‘user’ and ‘developer’ here might suggest why contextual conditions must be placed in dialogue as to better understand how the interactivity between different cultural attributes can and get translated into design. A noticeable example is that in the field, I noticed few (if any) women as designers/developers/university administrators. Most of the women were in the marketing, quality control, and support department. Software development work appeared to be from a masculine perspective. However, the understanding and translation of systems requirements into actionable design insight, which is a critical stage of any software project, is mostly informed by those women in the marketing and quality control departments. What this might suggest is the material implication of the interactivity between people and culture, which thus extends the practicing of situated and indigenous knowledge in design work.

Equally relevant is the locale of user's in design thinking and decision-making processes. Reflecting on existing work in the literature concerning the particularity of the 'human' in HCI methods point to the complexities of design framing when and where 'users' are absent, multiple or hybrid [13]. The common assumption is that those invisible users or idealised ones are scenic components of design spaces, which has led to the consideration of how post-userism might reorient the constitute other 'things' other than and more than 'human' in design processes and activities. Focusing on other 'things' other than the primacy of the user could therefore open up new possibilities about design that the proxy of well-known design approaches bracketed [12, 13] – meaning the focus on various 'centred- sensitive- oriented- specific' and so on design approaches. The sensitivity has allowed identifying and extending the functioning and manifestation of things 'other than' and 'more than' the human to the acceptability and adaptability of deployed tools.

More importantly, through the situated orientation, I came to apprehend how practitioners work beyond the user and focus more on issues like politics, context, culture, economics, religion, infrastructure, literacy and so on. To some extent, it seems that users are partly visible in the framing of Edusoft's everyday work of design. Within the framing of University manager, potential users are more likely to be tagged invisible, with the underlying assumption that they would adopt or could adapt to tools that might not have been designed by/with them. This might suggest that the engagement in the representation of multiple requirements would have minimal impact on design reasonings and decisions of designers (knowing well that they are designing for pre-user, users, non-users, or post-users), thereby providing a counter-narrative to common framing of design approaches in HCI. It is presumed that attending to the situated practices of practitioners might outline new tactics for the renegotiation and redistribution of the power manifested and reproduced in emerging educational and designerly ways of knowing. The knowledge attributes that standpoint identifiers are those that exemplify the gaps in situated knowledge, either indigenous or transnational. The emphasis is that one ought to focus attention on how the interactivity between people and places might bring about the creation of indigenous knowledge and practices that not only get shared but also get extended.

4.4 The juxtaposition of Indigenous Knowledge and Indigenous Design

"I don't think there is one solution fit for design and development. We need to look at the organization or the context, or the niche for which we are trying to provide your solution. What will work in Africa and be sustainable, and in Nigeria in particular, might be different from what might be feasible with what works in Europe or America. So, the ability to look at things like learning context, their habit, the technologies in place, dependability's in place, and dependencies for both parties will determine what's the best fit or local practices" (Associate Project Manager).

Relatedly, what the project manager is emphasizing is the adaptability and shifting structure of knowledge and design practices. Relying on the understanding that knowledge (either tacit or explicit)

is constituted and preserved from the recollection and reflection of people's practices, how then would an indigenous approach to geopolitics led to the design and deployment of indigenous technologies? Such issues have been examined by Awori and colleagues, emphasizing how indigenous technologies can sustain the practices of peoples in transnational context, while also providing avenues for storing and preserving knowledge within the locale of use [10]. This might suggest how the appropriation (or lack thereof) of technology relies on the interactivity that takes places between the people designing them and the people being designed for/by. The excerpt above is bringing attention to the distinction between Western practices of education and indigenous ones that focus on indigenous philosophical traditions, localized pedagogical, and practices of language. This is of particular importance as research has established the need for reframing the neutrality assumption of language in technology design [5, 14]. This places the necessity for reworking how African design can embody indigenous languages, either in its culture of design or in its design of linguistic cultures.

Consequently, the shipment of Western design cultures and educational practices has ultimately hindered the possibilities of developing sociolinguistic frameworks than can bring about the design and deployment of technologies that reflect the linguistic structure of deployable context. As such, standpoints make clear the need for decolonising the social imaginaries that shape the thinking of designing indigenous technologies, which in essence could epistemic emancipation and political competitiveness in technological discourses. The situated orientation also brings attention to the charismas of Western cultural practices, highlighting how they affect people's constitution and preservation of their knowledge, and thus needed to be supported in African design practices.

5 SITUATED IMAGINARIES AND KNOWLEDGE IN AFRICAN HCI – CONCLUSION

In this paper, we set out to show how a situated standpoint orientation supports and commits to the indigenisation and decolonisation of the practice of designing educational technologies in Nigerian software development industry. We claim that stereotypical paradigms for approaching and analysing design innovation in Africa might have hastily misinformed the situated practices of designing and deploying educational technologies in Nigeria. Partly due to the ontological and epistemological differences between Western and non-Western communities, there is the possibility that how social relations are constructed and translated into design work would be slightly, but significantly different. Although colonial ethics have framed and shaped the conditionings in most African communities, this does not warrant the continual and uncritical subjugation of African identities through imperialist canons. In essence, the paper moves towards identifying how the adoption of a standpoint positionality can provide political resources for recognising the power relations of postcolonial practices of design in HCI. This is achieved through the grounded of the perspective of a range of stakeholders within a collection of positionalities, which when taken up in innovating Africa provide useful resources for the material characterization of diverse inspiration in design work. What the temporal analysis has attempted showing are the

fractional implications of focusing attention on the situated interactivity between culture and locale in African modes of knowing, which brings about plural ways of framing technological innovation, and thus could support and extend indigenous practices of knowledge.

From the analysis of four cases where the difficulties of understanding plural culture and context become apparent, the alternative has provided a propositional way of articulating alternative modes of thinking about design innovation. When the alternative option is taken up seriously in analysing the practices of designing indigenous technologies, there are the possibilities that it might bring about the deconstruction of practitioners' perception towards and knowledge about indigenous technologies. Having examined the theoretical and conceptual ideas of an indigenous African standpoint as an alternative to current framings of the culture of design, it becomes obvious that the complexities of the cultural practice of design are partly due to the dominant relations of paradigms in transnational spaces. The central argument concerning the (mis)understanding of the plural cultures, as suggested by Peter Winch is that "in any attempt to understand the life of another society, therefore, an investigation of the forms taken by such concepts – their role in the life of the society – must always take central place and provide a basis on which understanding may be built" [54, p. 324]. The question then is whether the re-orientation of African design in HCI through developmental and postcolonial lenses could bring about reflexive deliberation of design choices within communities? Or would it be logical to rethink established sensitivities, to redevelop new and differential one's grounded in indigenous knowledge? This is the proposition that the paper present to the recent efforts of understanding the situated functioning (and implications) of plural culture in developing a community of practice in Africa, and specific to HCI4D research [44, 47].

With the consideration of standpoint as not stand still but situated, how then would the orientation react and respond to the powers of sociotechnical assemblage in HCI? Within the framing of the four cases analysed, standpoint acted as a socio-political vehicle for the generation of new insights into how diverse perspective evolve and interact as one dwells in institutional borders enacted by colonial and postcolonial conditions. The option also acted as a spatial mapping tool between social and technological issues in Nigeria, opening up new possibilities for thinking about technology design and deployment. Note that the sensitivity does not provide resources for crossing the border's erected by such conditions, nor dismantle them, but calls for staying with the troubles of working by plural possibilities of the future. From the analysis of the four cases, the political resources accorded by multiple possibilities did not provide a clear and concrete pathway for determining how design thinking and making by practicing indigenous knowledge might have altered the situated practices of practitioners that inform the study, it instead sought to reorient assemblage of power to take for granted 'things' of the present i.e., the ontological focus of design.

Placed with the framing of AfriCHI's theme of identifying alternative frames through which design can extend relational ontologies, the paper further argued that the adoption of a situated

standpoint and approach to knowledge can offer conceptual and analytical sensitivities for analysing the flow and exchange of design innovation across existing boundaries [2, 50]. Such an approach, although temporal and emerging, not only empowers individual experiences and collective perspectives but also provide the basis for developing plural design vocabularies that are embedded in African ways of being. This begs the question: How could situated imaginaries allow framing certain issues as 'wicked' or 'do-able' problems in African design? [22] How could situated approaches to knowledge allow demarcating what is transnational 'best practice' demands and what is translocal and 'do-able' practice entails? [3]. This question necessitates not only a rethink of what design in African culture envisions but also reworking how African culture of design works out in practice. Although the paper might not have addressed these questions specifically, it is through the framing of practitioner's perspective in some of the more prominent practice of HCI4D that these questions become more apparent. However, the paper contributes to AfriCHI's continual effort towards cultivating the culture of collective empowerment by exemplifying how situated approaches to knowledge support and extend the indigenization of design and its practices in transnational spaces. Indigenous knowledge, in its fractions or wholesome manifestation, provides work-able practices of design that are not prescriptive but produced within the context of the interaction between people, and also across cultures 'other than' and 'more than' human-centred.

For future work, the author will explore how a set of precepts–'play of possibilities' – can ensure that the framings of design innovation from Africa are developed from the ground-up and not some transported and idealised candidates for local appropriation and regeneration. The emphasis would be on cultivating an integrative cultural outlook that takes seriously neglected power relations so that tools developed and deployed get adopted and used effectively for teaching and learning across geographies. This calls for paying closer attention to the ontolo-political aspect of design and transitioning towards the politics of grafting in designing by/with the pluriverse.

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